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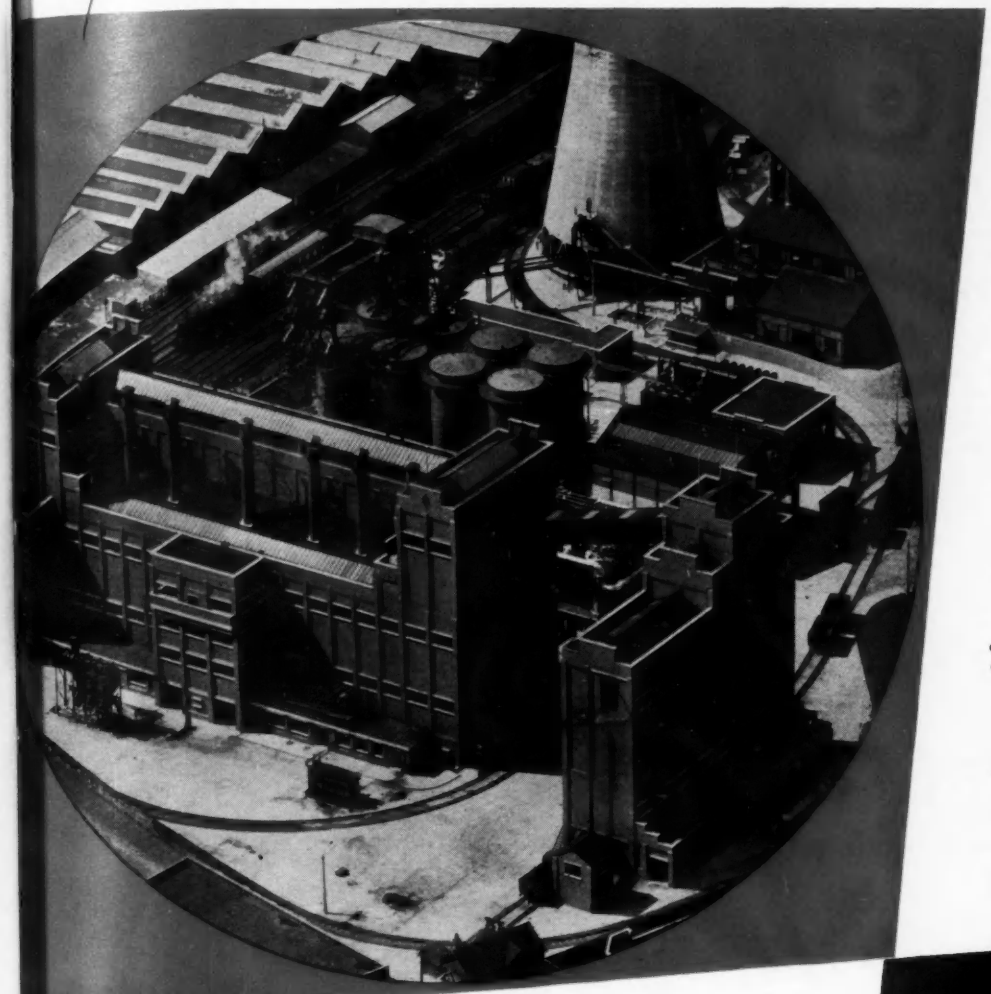

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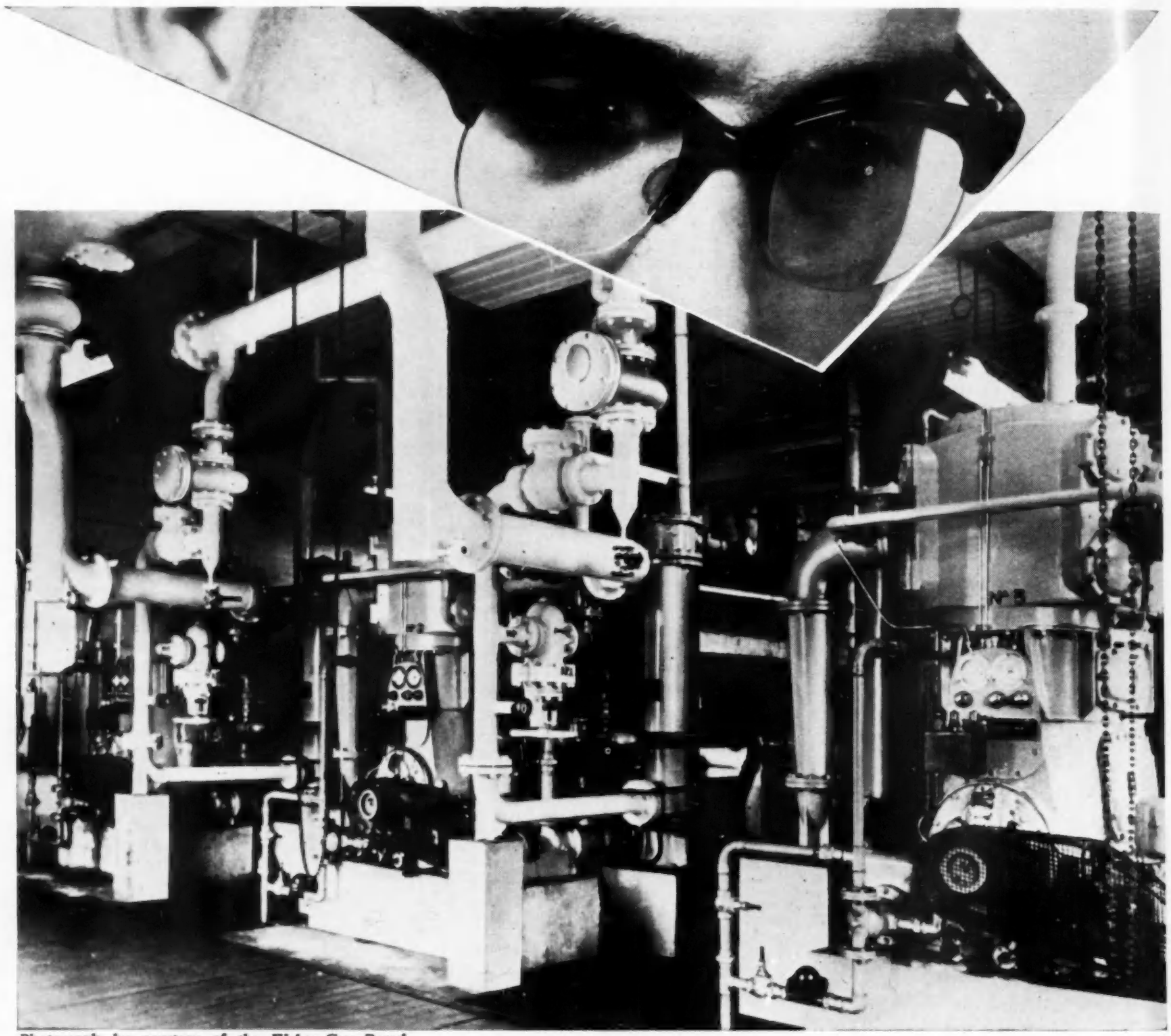

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The photograph shows the installation by The Bryan Donkin Company Ltd., at the Maelor Works (near Wrexham) of the Wales Gas Board of three Type 300/A 8″ Stroke Two Stage Vertical Reciprocating Compressors. Each compressor is capable of delivering 42,000 c.f.h. at a pressure of 225 p.s.i.g., when driven by a Lister Blackstone EVDF6 flameproof dual-fuel engine. The installation is complete with intercoolers and aftercoolers with valves supplied by the Bryan Donkin Company, Ltd.

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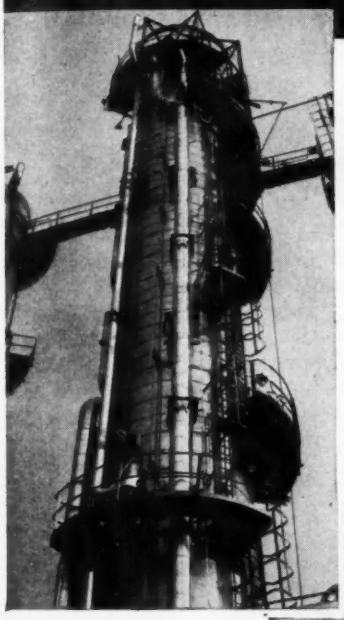

(Left) One of the 120ft. high regenerator vessels supplied by Babcock for the "Benfield" gas-purification plant at the Scottish Gas Board's "Lurgi" installation, Westfield, Fife.

(Below) The boiler-house, equipped with three 45,000 lb./hr. Babcock Bi-drum boilers with "Ignafluid" firing, and (centre) two benzol-absorber towers supplied by Babcock.

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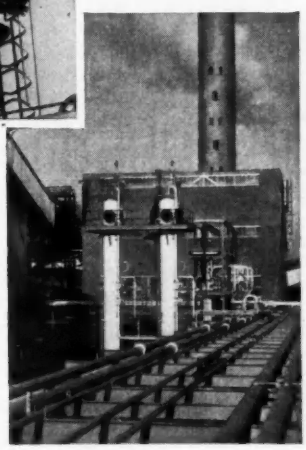

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Gas Journal

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CONTENTS

EDITORIAL COMMENT

Gas Production Trends in 1961 - - - - 127

ANNUAL REVIEW

Gas Fights Back. By R. Kelf-Cohen, C.B. - - 128
Industrial Relations—Education and Training - - 130
1960-61: A Year of Solid Achievement - - - 132
Three Pictures from the Year's News - - - 134
Space Heating Demand Boosts Home Gas Consumption - - - - - - - - - - 137
Away With the Deficit and On With £2 mill. Surplus 139
Integration Now Ready for Increased Consumption 141
Plant Development - - - - - - - 143
Approach to Women's Organisations Succeeds. By Jessie Frith, Women's Gas Federation - - 157
The Pattern of Gas Publicity - - - - - 158
B.G.S.A. Pursues 'Fuel Policy for U.K.' Plea By F. C. Henfrey-Smith - - - - - 160
NALGO—Britain's Seventh Largest Trade Union By G. W. Phillips, Gas Service Conditions Officer 161
Year's Personal Notes and Obituary - - - 162
Result, Report and Recompense. By J. R. W. Alexander, Gas Officers' Guild - - - - 165
I.G.E.: Highlights of the Year's Activities - - 167

NEWS SUPPLEMENT

Biggest Array of Gas Equipment for Industry is on Show in North-West - - - - - 169
Correspondence: Title Change - - - - 169

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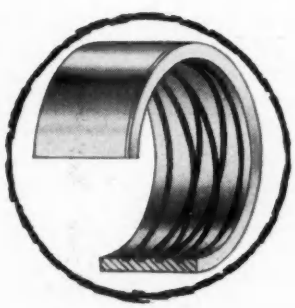

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Gas Journal

COKE OVENS • BY-PRODUCTS • CHEMICALS

Gas production trends in 1961

THAT gas production processes in Britain are radically changing is well known to anyone connected with our industry, but to what extent these changes in plant and feedstock are influencing the overall production figures may not be quite so obvious. A close study of the individual annual reports of the area boards and especially those sections devoted to gas production and its distribution reveal certain trends, the most striking of which is that the commissioning of a carbonising plant is now so rare as almost to make news headlines.

The future for coal then looks dim, but undoubtedly the new Lurgi plant at Westfield in Fife is doing something towards encouraging the use of low grade coal for gas-making. This is confirmed by the building of a second and higher capacity plant at Coleshill in Warwickshire. Lurgi plants are very costly and so they must be able to do what they set out to do. So little is really known about their performance and the Scottish Board has shown great courage in pioneering the process in Britain.

Where coal gas is being used in large quantities it is likely to be obtained from coke oven plants, 'merchant' plants owned by the National Coal Board. The chief exponents of this are the East Midlands, Wales and Northern Boards. The set-up in Wales perhaps favours its use more than in other boards, and the comparatively small output from this Board enables it to distribute some 80% of its total gas obtained from this source. The 'back-bone' main of the East Midlands and the special coke-oven grid of the Northern Boards, would seem to be rather more elaborate.

The North Eastern Board as well as being interested in coke oven gas has been able to extend the use of natural gas from its reforming plant at Whitby to other small undertakings in the North Riding of Yorkshire, with the closing down of uneconomic coal gas plant.

Clearly the feedstocks making the greatest impact on our industry today are refinery gas, primary flash distillate, and liquefied petroleum gases. Easily available refinery gases can, and in fact do, completely oust coal from the works. Such an example is Romford, but what of other boards? The Southern Board's works at Southampton is taking increasingly large quantities, now equal to some 25% of the Board's total gas output. The North Western Board is installing plant at Ellesmere Port to reform refinery gas from Stanlow and has already commissioned plant at its Partington works for processing gas from Petrochemicals Ltd.

In other directions p.f.d. seems to be insinuating itself. More and more carburetted water gas plants are being modified to use it as an enricher with a marked increase in gas-making capacity, as well as reforming it to a gas in its own right. The new MS plants now being constructed in the Eastern and North Western areas may only be peak load plants, but they reform p.f.d. enriched by l.p.g. at a comparatively low cost. These particular plants, the first of which is already gas-making at Cambridge are remarkable for the ingenuity of their design, the small space taken up for the output and the degree of automatic working.

There remains the use of l.p.g. or, if carried to its logical conclusion, the possible use of imported methane. L.p.g. is here already and is available from the oil distilleries, but methane would have to be imported. As things stand at present the chances of this happening appear to be rather worse than even. The chief use of l.p.g. so far seems largely to be for enrichment, which it and other gaseous hydrocarbons of high calorific value can do at 100% efficiency. It is this particular property, that makes these gases so suitable for use with substandard gas from Lurgi plants. We presume that such an application would make the importation of methane from Algeria acceptable to both the Ministry and the N.C.B.

The reforming of these gases in their own right is now gaining ground, and if pipelines carrying l.p.g. to works at increasing distances from the refineries can be laid economically, such processes will certainly develop.

Changes may be slow in coming and a large proportion of coal gas is still manufactured—or purchased as coke oven gas—by the area boards, but the production scene, we think, is likely to change very quickly within the next few years.

R. KELF-COHEN, C.B. says—

'IT IS HEARTENING . . . . . WHEN A DEFICIT IS CONVERTED INTO A SURPLUS. THE GAS INDUSTRY CAN RIGHTLY BE PLEASED WHEN THE DEFICIT OF £2.4 MILL. IN 1959-60 WAS CONVERTED INTO A SURPLUS OF £2 MILL. IN 1960-61. DESERVEDLY THIS RECEIVED A GOOD PRESS.'

WHEN a nationalised industry publishes its annual report, popular attention is focused on the financial outcome of the year's working. Headlines in the Press feature 'surplus' or 'deficit'; if the former, the industry is making progress and the nation, who presumably own it, can rest content; if the latter, the nation must begin to worry how far down the slippery slope the industry is travelling.

In the case of the gas industry both surpluses and deficits have always been modest. As the Gas Council points out in this last report (para. 229); the aggregate surplus of just over £2 mill. is only .5% of the gross income; and a surplus of £2 mill. on an income of £400 mill. is not very exciting.

But, of course, the accounts of the nationalised industries are very different from those of privately-owned industries, with their provisions for taxation, depreciation and reserves, after the gross profit has been struck. In publicly-owned industries all these various requirements are provided for before the surplus is arrived at.

Yet 'surplus' or 'deficit' is of great importance—especially to the morale of the industry and its workers. A business enterprise which makes a surplus—however modest—feels it is in control of its operations; with a deficit, the control is being lost.

Well-deserved

It is heartening, therefore, when a deficit is converted into surplus. The gas industry can rightly be pleased when the deficit of £2.4 mill. in 1959-60 was converted into a surplus of £2 mill. in 1960-61. Deservedly this received a good Press.

But the gas industry, in fact, consists of 12 autonomous business units. Last year six boards were in deficit and six surplus; this year four are in deficit and eight in surplus. North Eastern, Eastern and South Eastern incurred deficits in both years; Northern has this year swung from surplus to deficit. This year deficits are smaller than a year ago, when two boards were in the red to over £1 mill. each on the year's working.

The Scottish and the North Western Boards have this year staged a strong financial come back; the position of the former improved by £1.2 mill. and the latter by £1.5 mill.

The industry, as a whole, improved its financial position by £4.4 mill. in the year; these two boards, therefore, contributed nearly two-thirds of this achievement. It is apparent from the reports of the two boards that much hard effort has gone into achieving this result.

Part II of the Gas Council's report deals with the activities of the 12 area boards and contains much valuable information about them in handy form. But a perusal of the reports of the 12 boards brings home the difficulty of treating the gas industry as one unit. The outlook and conditions of each board vary so greatly.

Probably today the major difference between them lies in the sources from which they obtain their supplies of gas. When the boards were formed this difference did not loom so large as it does today.

In particular, the severe rise in the price of coking coal and the difficulties attendant on the sale of coke—which are stressed in the Gas Council's report—have loaded the dice heavily against the boards mainly dependent on the carbonisation of coal.

A burden

The Gas Council does not refer to the tax on oil of 2d. per gal., which was imposed in the Budget; this must have made the resort to oil much less attractive by adding to the costs of the industry a burden it can ill afford.

This diversity of conditions among the 12 boards is so great that the average in many respects is meaningless, except as an arithmetical convenience. The prepayment consumer in Scotland enjoys a melancholy pre-eminence in paying 32.98d. per therm.

Is it surprising that he bought over 5 mill. less therms in 1960-61 than in the previous year and that his numbers declined by 61,000 in two years? The average price paid by all domestic consumers in Scotland at 32d. is more than 10d. higher than in the East Midlands at 21.9d. The latter increased his purchases by 9 mill. therms.

Flight from coal

It might be pointed out, in contrast, that in the South East, where the domestic consumer paid an average price of 25d., he nevertheless increased his purchases by 8 mill. therms. But in the South East, the flight from coal for space heating has been stronger than probably anywhere else in the country, and gas has shared in the benefits from this tendency; this flight from coal proved a most serious embarrassment last year to the South Eastern Electricity Board, which last year increased its domestic sales by one-sixth.

Then there is the all-important industrial load, the revenue from which has increased every year. This load is sold on merit to discriminating consumers, who must be technically satisfied that gas is the fuel they must have; to that extent it is not subject to the vagaries of the domestic load.

Two Boards—the East and West Midlands—sell more than half their gas to industry and the former enjoys the benefit of buying more than 56% of its gas from coke ovens.

On the other hand the Southern sells only 12½% of its gas to industry and the South Eastern only 13.8%. They obviously cannot hope to benefit much from industrial boom.

There are, of course, many other

THE REPORT FOR 1960-61 shows that the area boards can still fight back amidst increasing difficulties. Their record for last year shows improvements at many points. But a breathing space must not be confused with a reprieve. The breathing space is most valuable but it is unwise to expect that it will last as long as one would like . . . .

s fights back

factors of diversity which cannot be dealt with in a brief article. The boards did not start even on May 1, 1949. Some had much heavier capital burdens than others: some took over undertakings in much better conditions than others.

Then there were the policies and personalities of the chairmen and the members of the boards. It would have been remarkable if all the 12 boards had progressed evenly, and the following table (which is probably as good an index as any) shows the unevenness of their progress since 1950-51.

Sales of Gas (Mill therms)

	1950-51	1960-61
Scottish	205	182
Northern	146	163
North Western	338	340
North Eastern	144	143
East Midlands	247	326
West Midlands	297	344
Wales	71	104
Eastern	125	141
North Thames	380	404
South Eastern	276	290
Southern	114	111
South Western	117	109

In the ten years since 1950-51, there has been a considerable increase in population, in prosperity and in standards of comfort. The table shows that only a few of the boards have been successful in taking advantage of these improved conditions to increase their sales in a commensurate degree.

The results

Against this background of great diversity let us look at the results of the year's working as shown in the Gas Council's report.

The industry on the whole has been successful in absorbing the increased costs of raw materials and labour, which happened, however, in the middle of the year. Prices of gas and coke had to go up, and in the short term the market held; in the long term the result of the increases is bound to be adverse.

The year 1960 was a boom year for the sale of fuel. The NCB sold 8 mill. tons more coal in the inland market (in the calendar year 1960); the electricity boards sold 12% more (domestic consumption was in fact 17% more).

Against these figures an increase of 2.9% by the gas industry can only be described as modest.

The urgency of procuring cheaper gas becomes greater and greater. Unfortunately the scheme for importing liquefied methane, on which so much work has been done, has become entangled with the Algerian imbroglio.

On political grounds alone, it seems quite definite that the Government, who now have the scheme before them, will turn it down.

No alternative

How is it possible to link supplies for a public utility with a country whose future is so uncertain as that of Algeria? An alternative scheme from another source of supply does not seem to have been prepared.

If the importation of liquefied methane does not materialise in the near future, it is very difficult to see what large-scale technique for cheapening gas is available.

The various methods of gas production which are being worked upon at the research stations are of value but not capable within a few years of materially altering the pattern of gas production.

We shall know in year or two whether the Scottish Board is being helped in its serious difficulties by the Lurgi plant at Westfield. But even if that fulfils all the hopes pinned on it, there is only one other Lurgi plant under construction at Coleshill; as a general technique for cheapening gas production Lurgi has a long way to go.

It looks, therefore, as if for some years to come, some boards will continue to prosper while other boards labour under difficulties. Their chairmen will naturally put first their responsibilities to their boards and their views as members of the Gas Council will be coloured by those responsibilities.

In these circumstances it is perhaps too much to expect from the Gas Council a firm determined drive on a clear-cut line of policy. That has not mattered very much so long as the difficulties of the industry were not serious enough to demand such a policy.

But there is general agreement in recent years that a reduction in the price of gas is of such overwhelming importance that some policy must be devised to bring it about on a large scale.

The next move is with the Ministry of Power. For years they have delayed the appointment of a Committee of Enquiry which might have been of great help to the gas industry. They have now been presented with the report of the Select Committee on which they will have to make some decision in the next six months. They have also before them the application from the Gas Council to import liquid methane.

Unthinkable

A blank negative rejection would be unthinkable; if, as seems certain, the Ministry rejects the application, they must couple it with suggestions of their own. They have in any case to deal with the Select Committee's proposal for the creation of a national board to produce gas on more than area board scale.

The report for 1960-61 shows that the area boards can still fight back amidst increasing difficulties. Their record for last year shows improvements at many points. But a breathing space must not

Continued on page 157

RELATIONS

INDUSTRIAL RELATIONS -EDUCATION AND TRAINING

THE GAS INDUSTRY STILL ENJOYS THE ENVIABLE REPUTATION OF BEING ONE OF THE FRIENDLIEST OF INDUSTRIES. EVEN IN THE YEAR UNDER REVIEW THE NUMBER OF PEOPLE EMPLOYED BY THE GAS COUNCIL AND THE AREA BOARDS HAS BEEN REDUCED BY MORE THAN 2,500 WITHOUT REAL TROUBLE. MANAGEMENT AND THE UNIONS TOGETHER HAVE SUCCEEDED IN PUSHING THROUGH A MEASURE OF REDUNDANCY WITHOUT CONFLICT.

THIS great industry can still justifiably be regarded as a pioneer in the two essential fields of industrial relations and educational activity. If it is to continue to be one, however, it must be recognised in all quarters that it can do so only within the limits of the economic state in which it finds itself from time to time. The price and quality of its products and the efficiency of its services must never be lost sight of by its employees, as they are never ignored by the consumers; the customer decides the prosperity of any industry.

By A SPECIAL CORRESPONDENT

THE fourth chapter of the Gas Council's last annual report, relating to the gas industry as an employer, is inevitably factual. The other chapters deal with accounts, research, sources of gas supply, coke, and sales. Chapter IV deals with human beings.

A fond illusion obtains in some quarters in this country, and in other countries as well, that the human being, when at work, is a different creature from the person whom his wife and friends know in private life, and that in some mysterious way, he requires less personal treatment and recognition.

It is thought that he has been subjected to some strange alchemy which has essentially transformed, during the time he is at work, his fundamental nature. True, some people put on a mask when they open the office door or march into the workshop. Such persons feel they must play and look the part—as shop steward, foreman, supervisor, manager, and the like.

They feel that they must not only be the superior, but must make it constantly known that they *are* one. Such elementary histrionics deceive no-one. Even in the beginning, a mask is easily penetrable. With time, it wears very thin; and instead of hiding the real features behind it, it merely distorts them.

If subordinates have to be continuously told who their immediate chief is, then there must be something radically wrong in the relationship. There is still a great deal of this kind of troublesome play-acting in some British industries.

It seems very odd in this day and age to see our own fellow-countrymen marching through the streets carrying banners, assembling in vast crowds in the open, shouting slogans about terms and conditions of employment.

It seems very strange in a country where there is over-full employment, that large numbers of men, and costly machines, should be idle, especially when we are so acutely in need of increased national production.

The gas industry is relatively and singularly free from this kind of expensive irrelevance. Such a state of affairs should be irrelevant in the context of efficient joint machinery for the settlement of terms and conditions of employment. The strike weapon today is, or should be, virtually out-of-date in this country as a means of settling disputes.

Redundancy.—The gas industry still enjoys the enviable reputation of being one of the friendliest of industries. Even in the year under review, the number of employees employed by the Gas Council and the area boards has been reduced by more than 2,500 without real trouble.

However inevitable and unavoidable the causes, one of the most unpleasant managerial tasks is to render certain employees redundant. It is equally unpleasant for the trades unions, which are consulted, and consulted as early as possible, to face facts in this field.

but they *do* face them, and management and the unions together have, by and large, succeeded in pushing through a measure of redundancy without conflict. This is not to say that it has everywhere gone through smoothly, but both sides are to be congratulated on the patience and understanding shown.

It is a tribute to the industry that it has successfully surmounted in a continuing degree one of the more awkward industrial relations problems.

In the present context of integration and rationalisation in the industry, it is unavoidable that the incidence of redundancy has fallen mostly on manual workers and that, by and large, rationalisation must result in some increase in the number of staff employees: 14.4% of staff were recruited in the year under review as compared with 13.9% in the previous year.

The 'wage pause.'—It is well-known to all that the Chancellor of the Exchequer is very anxious to see a wage and salary pause. He argues, in effect, that because, since the end of the last war, remuneration has outstripped both productivity and production, this has led both to inflation and to a recurrence once again of balance of payments difficulties.

Economic position

The present economic position is undoubtedly one of gravity. It is the Government's task primarily to tackle it. The country's employers, saddled with the responsibility of keeping prices stable, of forward estimating, and of ensuring the continuous expansion of business—business can never, in practice, stand still, it either goes backward or forwards—would naturally welcome a breathing space, if not a more systematic national approach to the whole question of remuneration.

Attitude of T.U.C.—The Trades Union Congress is a responsible body, and is as anxious as anybody else to avoid inflation. But it argues that the suggestion of a 'wages pause' came a little late in that a new wages cycle was already on the way.

Awards have already been given since the 'wages pause' to Admiralty storemen by the Industrial Court. The National Joint Council for the Furniture Industry has similarly made an award in respect of workers coming under its jurisdiction.

Furthermore, there are workers whose wages are tied to the Retail Price Index. Also, the T.U.C. has little power over its members because they are independent trades unions in their own right.

Sir Stafford Cripps, when Chancellor of the Exchequer, failed back in the '40s, for these reasons, to impose his wage restraint.

Cost of Remuneration.—The total cost to the gas industry in a full financial year of the improvements in the terms and conditions of employment was reckoned to be £9 mill. That is a great deal of money for an industry facing severe competition.

It follows that the gas industry must, like any other large industry, be concerned about the continuance of the frequent and periodic round of applications for improvements in this field, which has been the characteristic of this country since the end of the last war.

Pensions.—Actual remuneration is, of course, not the whole story. Pension schemes are very expensive matters. The gas industry has very good modern pension schemes both for manual and for staff employees, and they are being continually amended.

Relative value

Their relative value is shown by the fact that both the manual and the staff unions wished, as the result of careful examination, to contract out of the graduated part of the National Retirement Pension available under the National Insurance Act, 1959, those employees, both staff and manual, who, because of their pension arrangements in the industry, were capable of being contracted out, and whose basic salary or wage exceeds £9 a week.

Accordingly, notice to contract out—the Act requires this—was given to all persons concerned, and the Gas Council and the area boards concerned have received certificates of non-participation from the Registrar of Non-Participating Employments.

Joint consultation.—Joint consultation and suggestion schemes can be considered together, because both indicate the acceptance by the gas industry of the policy that each and every employee, whatever his or her status, can contribute something of value, not only in safeguarding and enhancing the health, welfare, and safety of employees, but in increasing the efficiency of the industry.

It would be unwise and unrealistic to expect rapid and miraculous transformation because of these matters. These committees are relatively new departures.

Fear of trespass on managerial prerogatives, on the one hand, and an exclusive concern with petty personal grievances, on the other, do not disappear overnight.

Consultation

But there has been undoubted departure from these barren attitudes. Both quality and quantity of joint consultative matters discussed have, by and large, undoubtedly increased. As the annual report points out, the area boards regard joint consultation, for example, as one of the effective means of communication.

Many subjects.—Also, the consultative committees in the industry—and there is a great number of them—do not all confine themselves to matters of health, welfare, safety and efficiency. There is a welcome and healthy tendency to spill over on to other subjects.

It is altogether good, for example, that many of them discuss their respective annual reports at such committees. The more this is done, the more the feeling should be engendered that each employee belongs to the industry, and that his own particular function is both essential and important in the total scheme of things.

National suggestion schemes.—Another significant factor is that even at national level, where, it is understood, a national suggestion scheme panel is only of recent establishment, seven national awards have already been made to suggestors whose suggestions have come up through area board suggestion schemes—one such suggestor, from the West Midlands Gas Board, receiving as much as £70.

Other important means of communication in this context are, of course, the area board magazines. The North Thames Gas Board is to be warmly congratulated on having successfully maintained the publication of *Thames Gas*, which was established 50 years ago.

Health and safety.—Health and safety are also, of course, of vital importance. It is reassuring to see the gas industry, amid all its problems of change and adaptation, increasing rather than diminishing the attention it pays to its medical and first aid services. It is comforting also to read that both the sickness and accident rates for manual workers, expressed as a percentage of total possible man-days, are less compared with those of the previous financial year.

Advances

Education and training.—Since the position when the Gas Council first submitted its report on education and training to the Minister of Fuel and Power in 1952, there have been substantial advances on all the educational and training fronts.

The industry has endeavoured since then to ensure that, wherever practicable, there should be the same educational and training facilities made available to all employees, regardless of where they work.

Also, that both the quality and range of educational and training courses available should compare more and more favourably with those offered by other industries.

In a now rapidly changing industry such as the gas industry, flexibility and adaptability of courses are already essential, so that if an area board wishes to emphasise at any particular time this or that aspect of its policy, the educational and training programme can be used to give every assistance, whether the particular emphasis is on the commercial side, or on any other aspect.

Co-operation.—British industry has an increasingly comprehensive State educational system at its disposal. The gas industry functions in the field of education and training in close touch and co-operation with local education authorities.

Where local State educational facilities are not entirely adequate for the needs of the industry, some area boards have set up their own training centres in certain parts of the industry.

Continued on page 161

INDUSTRY

1960-61: A YEAR OF SOLID ACHIEVEMENT

SALES OF GAS TO INDUSTRIAL CONSUMERS DURING THE YEAR ENDED MARCH 31 1961 AMOUNTED TO 852 MILL. THERMS. THIS REPRESENTED AN INCREASE OF 33 MILL. THERMS, OR 4·1%, OVER THE CORRESPONDING FIGURE FOR 1959-60. OVER THE SAME PERIOD, CONSUMPTION PER INDUSTRIAL CONSUMER ROSE FROM 9,120 THERMS IN 1959 TO 9,650 THERMS IN 1960-61.

THE Gas Council is well aware of the severity of competition in the industrial field but is confident that the gas industry can continue to hold its own and, indeed, can increase its share of the country's demand for industrial fuel.

GAS must prove competitive on the basis of the service it offers the consumer—and through the equipment it develops—to give the industrialist a more economic performance than is provided, when all relevant factors are considered, by any alternative fuel.

In order to be able to offer this equipment the gas industry must be continually mounting programmes of fundamental research, leading to the development of new prototype equipment and new techniques. These, in turn, can then be further developed for commercial application under industrial conditions in close collaboration with the manufacturers of this equipment.

Collaboration between the gas industry and equipment manufacturers was never more necessary than at the present time and it is clear that this is being increasingly recognised by many well-known firms whose gas-fired equipment is widely used throughout industry.

While this process is continuing along a very wide front, there are a number of specific developments which can be regarded as particularly good examples of the type of research which is setting the trend for the future.

Throughout industry there is a sharpening interest in automatic methods of production, which in turn has focused attention on the development of suitable forms of automatic control mechanisms. The gas industry has a vital part to play in these developments, especially where gas-fired equipment forms part of an integrated production line.

A great deal of work is taking place in the Gas Council's research establishments with the general aim of improving the standards of performance on 'push button' equipment.

Some of the objectives of this work include the elimination of unnecessary heating-up times and any loss of performance due to cold air flowing through the plant between process times.

The original research work now in hand on ignition and control systems for automatic gas-fired equipment is an example of the gas industry's forward thinking.

Another field in which the gas industry is poised to share in an important advance is in metal melting, where the current trend is in the direction of improved melting conditions, particularly in respect of the speed of the process.

An example, covering one aspect of a very big trend, is the unit which has been initiated by the industry in collaboration with the Factory Inspectorate and the foundry trade.

In addition to the advantages claimed for this development from an economic point of view, it will also reduce the discomforts associated with the holding of unnecessarily large quantities of hot metals for lengthy periods during casting operations.

...o maintain a throughput it is necessary to be able to melt the metal fast enough to keep a continual supply for the available moulds and this is now possible with this new equipment.

It is claimed that fuel consumption has been reduced with this new method to approximately half the gas rate, while the time rate of melting has also been reduced to one-half. As there is also a considerable reduction in metal loss during melting with this new process, it can be seen that it represents a considerable advance on this particular front.

At the same time, it should be emphasised that this is only one example of the progress which is being made in the important field of metal melting, but it serves to demonstrate that the gas industry is both aware of the need for development and able to put forward its own solutions.

An example

This can perhaps be regarded as an example of one way in which the fundamental research carried out by the Gas Council's research staff has been disseminated to local board level and applied to the solution of a specific problem.

Another example was the recent development of gas-fired equipment for brass billet heating, as required in the brass stamping industry, where, generally speaking, the existing equipment used for heating metal has no real temperature control or heat recovery.

The new equipment, which has already aroused keen interest in the stamping industry, provides for proper counter-flow operation, with heat recovery and efficient working.

The significant feature, however, is that this equipment enables the manufacturer to introduce a flow process operation into his plant, amounting almost to 'push button' control so far as the billet heating part of his operations are concerned.

This is yet another example of the fact that gas is looking ahead to the future rather than the present needs of industry.

Annealing

There is evidence, too, that the gas industry is playing an active part in the new thinking which is taking place on the question of high-speed annealing. Obviously, the shorter the time the metal remains in the annealing furnace, the shorter is the time it is exposed to the risk of the various undesirable conditions which can result. The economic advantages of faster annealing procedures are obvious and anything which the gas industry can do to bring these procedures nearer will represent a real service to industry.

In the newer industries and, in fact, throughout industry as a whole, there is an insistent demand for higher standards of heat treatment on the part of the suppliers of the basic raw materials of industry. Steelmakers are being pressed to produce clean billets for such industries as, for example, those concerned with nuclear power.

Gas is making its contribution towards this demand by its work on the problem of clean heating procedures at 1,200° C. The problems associated with this treatment on large billets are at present engaging the industry's attention, thus providing one more example of the forward approach of the gas industry.

There is a definite demand for new methods among steelmakers whose customers realise both the technical and economic advantages of steel produced to finer specifications.

A particularly interesting departure in which gas has made important strides within the past two or three years has been the stress relieving of large vessels *in situ*. It is claimed that these procedures enable the work to be done at costs more than competitive with other methods.

During the year under review, this technique has now been extended to cover other fields, including the drying out of glass tanks, after re-bricking. This is a difficult operation, requiring carefully-controlled conditions enabling the temperature of the tank to be raised in accordance with a pre-determined schedule.

At intervals

Once a glass tank has been rebuilt and brought into operation again, it will remain in continuous service for a very long time so that this special gas-fired equipment for drying out tanks is only required at lengthy intervals.

The equipment has therefore been designed as a portable (or 'packaged') unit, complete in itself, which can be transported to sites as required, representing a service which the gas industry performs for the customer.

At the same time, by employing this equipment at glassworks throughout an area, a valuable load, running into millions of cubic feet a year, will be obtained. In addition, a valuable service has been accorded to the glass-making industry.

Although this specialised application of the *in situ* principle is important in its own right, it is still more significant as an instance of the way in which the industry is developing versatile tools for many different applications. The 'packaged' burner unit is definitely capable of many more applications throughout industry.

Here, therefore, are five examples of the way in which the industrial section of the United Kingdom gas industry is looking to the future, taken from the important fields of automatic control, rapid melting of metals, faster annealing, clean hardening and *in situ* heat treatment.

These are given prominence because progress has been reported in all these fields during the past year or so and because they show how the accumulated 'know-how' of the gas industry is being channelled into practical applications in industry.

It is also appropriate to refer to the more fundamental research upon which these applications are based. The Gas Council's report refers briefly to this research which is in hand at one or other of the Council's two research establishments, namely, Watson House and the Midlands Research Station.

Among the many types of research in which progress was made during the year under review was work on the increasing use of convection in industrial heating processes and the improvement in the quality of controlled atmospheres in heat treatment.

Burners

Other directions along which work is proceeding include basic studies on high temperature furnaces and the fundamental design of combustion chambers. Under investigation is the development of air blast and other tunnel burners, the study of pulse combustors and the investigation of furnace heating by high velocity and other types of burners.

It is evident, therefore, that both in the laboratory and at industry level, the gas industry is alive to the needs of both its present and future customers for equipment to meet the increasingly complex demands of modern industry. The very success of this side of operations brings its own problems. How, for example, are these new developments to be brought home to the potential industrial customer?

A certain amount can be achieved by the use of publicity methods, such as taking part in industrial exhibitions and trade shows and making use of the film as a medium of information. 'The heat of the matter' was a good example of the latter method and a new film, entitled 'Precision for the mighty,' illustrating the part which gas is playing in four firms with large-scale products, has just received its first showing.

Booklets

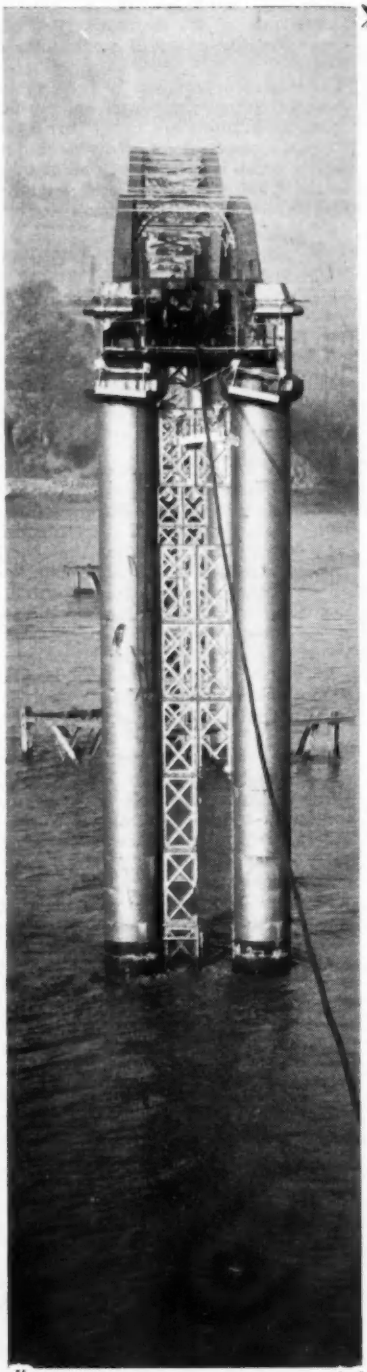
Another commendable activity of the Gas Council was the production of the booklet 'Modern foundry practice,' which has proved so successful that it has had to be reprinted within a month of initial publication.

Other similar booklets, spot-lighting the part which gas can play in other industrial sectors, are planned and, provided this material reaches those levels in industry which influence the decisions to purchase plant, much good should result.

But, in the ultimate analysis, it is the industrial gas engineer who has the most intimate contacts with the end-user of gas-fired equipment. These are everywhere recognised as efficient, hard-work-

Continued on page 157

3 PICTURES FROM THE YEAR'S NEWS



In October, 1960, an accident in thick fog demolished two spans of the Sharpness bridge across the River Severn, and destroyed a section of the 12-in. high pressure gas main. Our picture shows the temporary polythene pipe, able to withstand a pressure of 80 p.s.i., being hauled across the 546-ft. gap supported by a steel cable.

Sir Henry Jones, Chairman of the Gas Council, proposing the toast 'The City of Birmingham' at the Golden Jubilee luncheon of the Service of Gas to Industry held by the West Midlands Gas Board at Sutton Coldfield last March. Others in the picture (left to right): Alderman J. Lewis, Deputy Mayor of Birmingham and Chairman of the West Midlands Gas Consultative Council; Mr. G. le B. Diamond, then chairman of the West Midlands Gas Board; Mr. R. S. Johnson, Chairman of the East Midlands Gas Board; and Mr. W. R. Branson, Deputy Chairman of the West Midlands Gas Board.

The Minister of Power, the Hon. Richard Wood (right) on a visit to the headquarters of the South Eastern Gas Board, Croydon. In this picture from last February he is seen with (left to right): Mr. R. N. Bruce, Chairman; Mr. R. G. Hildrew, Production Control Officer; and Mr. R. H. Sandford Smith, Deputy Chairman.

SALES

SPACE HEATING DEMAND BOOSTS HOME GAS CONSUMPTION

THE NUMBER OF DOMESTIC CONSUMERS AT MARCH 31, 1961, WAS 12,100,237, SLIGHTLY LOWER THAN AT THE END OF THE PREVIOUS YEAR. TOTAL GAS USED BY DOMESTIC CONSUMERS INCREASED, MAINLY BECAUSE OF THE INCREASED SALES OF SPACE HEATING APPLIANCES. SALES OF COOKERS, WATER HEATERS, WASH BOILERS AND WASHING MACHINES DECLINED, BUT SPACE HEATERS AND REFRIGERATORS SHOWED AN INCREASE.

The level of sales of warm air units and central heating installations was encouraging, 8,000 warm air units and 18,000 central heating appliances being installed during the year, against 3,000 and 10,000 in the previous year. Cooker developments have included simplification and improvement of automatic ignition, the introduction of thermostatic control on hotplate burners, and the use of hotplate bars. The slight relaxation of hire purchase restrictions in January, 1961, has not materially affected sales.

SCOTTISH: While industrial and commercial sales of gas showed encouraging increases over the previous year's result, there was a reduction in the sales of gas and of appliances in the domestic market. The total amount of gas sold and the total number of customers show decreases on last year's figures. The amount of gas sold showed a decrease of .7% compared with the previous year. The total number of customers connected to the Board's mains at the end of the year decreased by 4%.

The value of appliances sold amounted to £2,020,767 compared with £3,434,110 for the previous year; a decrease of 41%. The re-imposition of restrictions on hire purchase undoubtedly contributed to this decline, but it was not the only cause, and the Board is taking swift action greatly to increase its sales force in the domestic market.

There has also been a very satisfactory upward movement in sales of gas in the commercial sector, amounting to an increase of 4% over the previous year.

EASTERN: Sales of gas were a record at 2.8% higher than in the previous year. The decline in average consumption of gas per domestic consumer was arrested; the average of 106 therms was 2 therms higher than the previous year's figure.

Owing to credit restrictions, the rise in appliance sales during the year was interrupted, but 114,416 appliances, of which 94,571 were major appliances, were sold. The 44,945 major appliances sold for cash make the highest number since nationalisation. Record sales of gas space heaters and refrigerators were achieved.

Total sales of smokeless solid fuels, rose by 7.1% to 727,686 tons, which included 104,625 tons of Gloco and 30,224 tons of Cleanglow. The entire 1,500 tons of Cleanglow a week production at St. Albans works was readily sold, and the entire production of Gloco, made at four works, was also sold out.

NORTH EASTERN: In fixing tariffs to operate from October 19, 1960, the Board introduced an alternative optional non-domestic two-part tariff with a standing charge of £2 per quarter and all gas at 18d. per therm.

Total gas sales were 1.4% above the previous year. The loss of prepayment consumers is a matter of grave concern. The total value of appliance sales was 16.4% below the record sales figure of last year. There were 877 gas-fired central heating units sold, compared with 262 last year. There is a growing awareness among local authorities of the value of a warm air central heating system.

NORTH THAMES: Sales of gas rose by 2.97% and increased emphasis was placed on the sales of load-building domestic appliances. One of the

causes of the increase in this year's sales of gas was the continued success achieved in the sales of gas-fired domestic central-heating installations. The high levels in sales of other domestic appliances achieved last year fell with the re-introduction of hire-purchase controls.

New central heating advisory centres were opened by the Board at Staines, Pinner, Hornsey and Finchley.

Sales of gas fires showed an increase of 17% over last year's figures, which were themselves 41% up on the preceding year. All new and re-designed commercial kitchens in the area chose gas as the principal means of cooking. Included among these were the kitchens of new hotels such as the Carlton Towers (Sloane Street), the Marlborough (Pimlico) and the Ariel (near London Airport).

Total sales of Cleanglow, Gloco and coke showed an increase of 5% over last year. In the four years since Cleanglow was introduced by the Board, its output has increased five-fold.

NORTH WESTERN: Gas sales for the year, at 337.3 mill. therms were .53% up on the previous year's sales. Sales of coke and Phimax totalled 1,301,194 tons and were virtually unchanged, as were sales of breeze.

Because of hire purchase restrictions, sales of domestic gas appliances were lower than in the previous year, but at £4,370,000, were well above the average for the last four years.

The average consumption of gas per annum by domestic consumers was 91.16 therms, which was slightly less than in the previous year. The number of consumers fell during the year from 1,801,811 to 1,782,896. Of these 1,676,270 were householders, 10,824 industrial customers, 90,831 commercial customers, and the remaining 4,971 public authorities.

Of coke sales, 1,051,000 tons were sold in the inland market and 145,000 tons were sold overseas, principally to Scandinavia.

SOUTH EASTERN: Sales of gas were a record and there were big increases in sales of central heating boilers and room-heaters. Sales of gas were 275.8 mill. therms, 4.14% up on last year, in spite of a mild winter.

Domestic sales of gas were 4.8% up on last year. Sales of gas central heating boilers rose by 55% and warmed air installations by 73%. Sales of room-heaters (excluding portable heaters and radiators) showed an increase of 13% on the previous year.

Customers increased by 7,548. Appliance sales totalled £6,838,390, only £200,000 below last year's record, in spite of hire purchase restrictions.

The solid smokeless fuels Sebrite and Gloco have been well received by the public and income from their sales was up

EAST MIDLANDS: After a period of three years of price stability, the Board, in November, 1960, was obliged to increase the price of gas.

The number of consumers connected to the mains at the end of the year was 1,219,647. Sales of gas at 323,296,000 therms show an increase of 6.34% compared with 1959-60 when in turn sales were 4.12% up on the previous year's level.

Industrial sales increased by 5.52%, and sales to commercial consumers rose by 5.96%. Domestic sales increased to the record level of 122.5 mill. therms, 7.9% more than in 1959-60.

The most important factor was the installation of gas fires for space heating in main living rooms. Over the past three years more than 100,000 gas space heaters have been sold, of which it is estimated that one-half went into main living rooms and almost one-third into second living rooms.

Notwithstanding the reintroduction early in the year of hire purchase restrictions, 47,604 space heaters were sold compared with 33,304 in the previous year. Sales of refrigerators also increased to 8,529 from 7,377.

SOUTH WESTERN: Gas sales exceeded those of the previous year in each of the three principal spheres. The increase in the domestic field is principally attributed to the use of gas for space heating—whether by conventional central heating, warm air or radiant convector room heater.

During the year 100,000 domestic consumers took advantage of one of the two optional two-part tariffs. It is expected that this number will continue to grow. In the commercial field, new school and factory canteens continue to make a useful contribution to the increasing load.

Total sales of central heating boilers exceeded those of the previous year by 104%, warm air units by 37%, and fixed room heaters by 8%.

SOUTHERN: Total gas sales showed a small increase of .4% the most encouraging increases being to domestic credit customers and commercial consumers. Consumption was affected by the mild weather of January, February and March, 1961, which were respectively .5°, 4.1° and 2.6° higher than the same months of 1960.

Consumers increased by 3,522 during the year to a total of 632,286. Average annual consumption per customer increased by one therm to 171 therms.

Major increases in costs gave rise to increased prices after three years of stability.

Reimposition of hire purchase restrictions had an immediate and heavy impact on sales which continued throughout the financial year. The total number of appliances of all kinds sold showed a decrease of 16.1% on the previous year, with major domestic appliances showing a drop of 10.3%.

Sales of warm-air and gas-fired domestic central heating boilers increased considerably, the upward trend in refrigerator sales was maintained, and a low-priced clothes dryer proved extremely successful.

The value of appliances sold amounted to £2,321,000 compared with £2,680,000 in 1959-60. Of houses completed where gas supplies were available 96% were carcassed for gas and 92% supplied with gas meters. Cookers were installed in 67%.

WEST MIDLANDS: Gas sales reached a new record figure of 341 mill. therms, exceeding that of 1959-60 by 3.6%. Domestic gas sales showed an increase for the first time since 1954-55 and sales per domestic customer, which had fallen steadily since 1950-51, were higher than in the previous year.

Sales of gas appliances were disappointing, their value being only £2,786,213 compared with £2,975,776. Sales of gas fires and gas refrigerators were, however, encouraging.

WALES: The Board sold 104.6 mill. therms, an increase of 6%. By the end of December 1960 the increase over the equivalent period of the preceding year was 7%. The easing-up in demand was caused by the exceptionally mild weather in January, February and March. The number of consumers increased from 487,975 to 491,840.

The sale of gas to domestic consumers was 47.5 mill. therms, an increase of 4%. Equally encouraging was the increase from 100 to 103.1 therms of gas in the average consumption per domestic consumer.

Sales of appliances increased slightly from last year's record figure of £1,836,396 to £1,871,991. A fall in sales of refrigerators was offset by increased sales of convector fires.

A notable feature has been the interest shown in gas-fired warm air central heating units by estate developers, both private and municipal.

NORTHERN: The total quantity of gas sold amounted to 168 mill. therms, an increase of 3.24%, due partly to colder weather, and partly to increased sales for heating.

Sales of appliances, due to the reimposition of restrictions upon hire purchase, fell slightly by 2.5% from 74,354 to 72,530. While cooker sales decreased by 11.1%, sales of space heaters rose by 18.9% and refrigerator sales by 55.7%.

FINANCE

AWAY WITH THE DEFICIT AND ON WITH £2 MILL. SURPLUS

THE AGGREGATE RESULT OF THE 12 AREA BOARDS' OPERATIONS FOR THE YEAR WAS A SURPLUS OF £2,039,124 COMPARED WITH A DEFICIT IN THE PREVIOUS YEAR OF £2,376,521. EIGHT BOARDS ACHIEVED SURPLUSES TOTALLING £3,055,078 AND FOUR BOARDS INCURRED LOSSES TOTALLING £1,015,954. THREE BOARDS MADE TRANSFERS TO RESERVE FUNDS, TOTALLING £795,000, FIVE BOARDS TRANSFERRED £1,535,000 TO REPLACEMENT AND OBSOLESCENCE RESERVES, AND THE NORTH THAMES GAS BOARD TRANSFERRED £100,000 TO AN INSURANCE RESERVE.

THE Gas Council's net revenue expenditure amounted to £3,316,815 compared with £2,634,330 in the previous year. Expenditure on research, testing and development increased by £602,554, becoming £1,449,734. At March 31, 1961, the outstanding liabilities of the Council totalled £610.5 mill., comprising £465.2 mill. British Gas Stock, £123.1 mill. advances from the Ministry of Power, and £22·2 mill. loans from the Clearing Banks. The Council's new net borrowing during the year was £15·6 mill. compared with £33·1 mill. in the previous year. This trend towards self-financing is expected to continue.

SCOTTISH : There was a profit on the year's operations of £633,696 and an accumulated deficit carried forward of £921,801. The profit for the year compares with a loss in the previous year of £555,559, an improvement of £1,189,255 accounted for by an increase in income from sales of gas of £867,980, and a decrease in net expenditure of £321,275.

Sales of gas have fallen by 1,271,000 therms. On the other hand the average yield per therm has increased as a result of the adjustment of tariffs during the year. The net effect of these changes was an increase in revenue from gas sales of £867,980.

Expenditure in total shows a reduction of £321,275 in spite of higher wage rates which cost £250,000, and higher coal prices which added £150,000 net to the cost of raw materials. In addition, exceptional expenditure of £364,600 was incurred in commissioning expenses and interest charges during the construction period of the Lurgi high-pressure gasification plant at Westfield, Fife, and the associated high-pressure grid system.

The net cost of production of gas and products has fallen by £755,906. Of this reduction approximately £95,000 is the result of reduced sales, the balance of £661,000 arising from more economical production.

The overall cost of gas production has fallen by .26 of a penny a therm.

NORTHERN : The volume of gas sales, of 168 mill. therms, showed an improvement of 3.24%, about equal to the decline suffered in 1959/60. Income from products, mainly coke, breeze and tar, increased by £170,000.

The increase in revenue from sale of gas for the year was £400,000, which, after deducting production cost, gave a benefit of £250,000. Increases in other costs (particularly general consumer services and capital charges) of approximately £400,000, led to a worsening in results of £152,000.

After deducting the deficit for the year of £58,884 from the credit balance on revenue account, a balance of £338,751 remains to be carried forward. Capital expenditure incurred during the year amounted to £1,379,209.

NORTH EASTERN : The results for the year show a deficit of £228,624 after providing for depreciation, interest and other capital charges. After bringing in the surplus of £121,810 from 1959-60 there remains a deficit of £106,814 to be carried forward to 1961-62.

The volume of gas sold was 143.1 mill. therms, against 141.5 mill. therms in the previous year. The revenue from gas sales amounted to £12,466,303, against £11,948,525.

The cost of gas and products was £11,194,712, against £10,978,646, from which is deducted the net income from products, of £4,941,809, against £4,883,788.

EAST MIDLANDS: The accounts show a net surplus of £376,029. The balance brought forward from last year is £686,100 and the total disposable surplus amounts to £1,062,129.

The Board has appropriated £250,000 to reserve fund and £460,000 to restore the replacement and obsolescence reserve which was utilised to this extent during the year. The balance carried forward on revenue account is £352,129. The average yield per therm has increased from 16.6d. to 16.7d. during the year.

NORTH WESTERN: The surplus for the year is £210,164, equivalent to .15d. per therm of gas sold and used, compared with a deficit of £1,303,417, equivalent to .92d. per therm of gas sold and used for the previous year. After bringing forward the credit balance on revenue account of £179,761 there remains a net credit balance on revenue account of £389,925 to be carried forward.

Depreciation, which has been provided on the same basis as in previous years, was higher by £96,004 than in 1959/60 as a result of further capital expenditure. The average rate of depreciation provided on post-vesting assets was 4.9% for the year.

Interest payable and allied expenses, less interest receivable and other income, increased by £42,035 over last year owing to higher rates of interest. The average rate of interest on the mean capital employed during the year was 4.05%.

Capital expenditure is lower, while the depreciation provision has increased to £4.7 mill., equivalent to 131.15% of capital expenditure. Thus the whole of capital expenditure was provided from internal resources. Capital obligations have also been reduced.

EASTERN: There was a deficit of £268,417 for the financial year, compared with a deficit of £367,440 for the previous year. The deficit for the year under review is therefore £99,000 less than that for the preceding year; this position arises mainly from the additional revenue which has been received from the increase in the price of gas.

Additional income from increased gas sales amounts to £351,000, and the increased revenue from the increase in the price of gas is £408,000. Increased capital charges in the form of depreciation at £57,000, and interest (net) at £87,000, give an additional deduction of £144,000 for the year.

WEST MIDLANDS: There was a net surplus on the year's working of £680,187. This compares with a surplus of £668,570 in the previous year and is the third best result since vesting date. The surplus for the current year was lower by only 1.5% of revenue income or rather less than 4d. in the £.

Income from gas sales was up by £725,930. This was mainly the result of the increase in the volume of gas sold. Nevertheless, because of the preponderance of industrial sales, the average price of gas sold fell from 19.07d. to 18.92d. per therm.

Total revenue income increased by £1,603,000 to £43,998,000; total revenue expenditure increased by £1,592,000 to £43,318,000. The net surplus when added to the balance of £348,620 brought forward, provided a balance available for appropriation of £1,028,807. Of this, £500,000 has been transferred to the reserve fund and £150,000 to the replacement and obsolescence reserve.

NATURAL GAS

THE report of the Minister of Power on gas for the year ended March 31, 1961, referring to natural gas, says:

Nine wells were drilled by the BP Exploration Co. Ltd. during the year in continuation of the agreement with the Gas Council to search for natural gas and associated structures which might be suitable for gas storage. Of these, five were at Cliffe, in Kent, and four near Winchester, in Hampshire.

The well in the Cousland area near Edinburgh, which began to supply natural gas to the Musselburgh gasworks in October, 1957, has now produced about 94 mill. cu.ft. of gas, 36 mill. cu.ft. being supplied in the current year.

A supply of natural gas from the BP Exploration Company's wells at Eskdale in Yorkshire to the North Eastern Gas Board's gas works at Whitby was inaugurated by the Minister in September, 1960. By the end of March, 1961, some 37 mill. cu.ft. of gas had been supplied to the gasworks, where it is reformed and fed into the town mains.

WALES: The surplus for the year before taxation was £50,744, against £138,514 in the previous year. Added to this is the transfer from reserve for future taxation, of £70,000, and the balance from the revenue account which has been carried forward, amounting to £282,426.

Sales of gas brought in £8,239,236, and the costs of gas and products was £4,578,604. The volume of gas sold was 104,634,000 therms against 98,686,000 therms in the previous year.

From the surplus for the year, £45,000 was transferred to the reserve fund and £75,000 to replacement and obsolescence reserve. The balance carried forward is £283,170.

NORTH THAMES: The revenue from sales of gas amounted to £39,260,027, against £37,335,430, and the net income from products was £15,660,242, against £14,032,030 in the previous year. The cost of gas and products was £36,767,690 against £34,919,283.

The surplus for the year before taxation stood at £637,159 against £62,138.

From this surplus £550,000 was transferred to the replacement and obsolescence reserve and £100,000 to the insurance reserve. The balance carried forward was £633,624, against £646,465.

SOUTH EASTERN: The balance from the year's trading after charging depreciation, amounted to £1,884,587, against £937,602 in the previous year. From this is deducted interest charges, giving a deficit on the year's working of £460,029 against £1,289,619.

The balance brought forward from the year and adjustments relating to previous years, bring the balance carried forward to £11,158, against £161,187.

The deficit for the year was £830,000 less than that for the previous year. Gas sold to consumers reached record levels and showed an increase of 4.14%. Gas revenue was also higher because of the price having been increased for the first time since August, 1957 This would have produced a surplus but for the heavy and unexpected increases in cost which took place during the course of the year.

The balance on the replacement and obsolescence reserve will be reduced to £3,232,637, and there will be charged to it in future such obsolescence of post-vesting assets as will arise from the Board's reconstruction programme.

SOUTHERN: The surplus for the year after taxation was £236,908 against £251,442 in 1959/60. Sales of gas brought a revenue of £11,487,564 against £11,096,901, and net income from products was £3,573,736, against £3,921,219. The cost of gas and products was £8,908,326, against £9,433,328.

The surplus after taxation plus a transfer from reserve for future taxation, and the amount brought forward from 1959/60, gives a total of £507,817.

Of this sum £300,000 is transferred to replacement and obsolescence reserve. This leaves a balance to be carried forward of £207,817.

SOUTH WESTERN: Sales of gas during the year brought in £11,834,343 against £11,597,949 in 1950/60, and products brought £4,597,148, against £4,493,398. The cost of gas and products was £9,925,156 against £9,942,635.

The surplus for year after taxation was £230,191, and after deduction of adjustment relating to prior years and the debit balance brought forward from the previous year, a debit balance was carried forward, of £147,047.

DISTRIBUTION

INTEGRATION NOW READY FOR INCREASED CONSUMPTION

EACH YEAR A FURTHER INSTALMENT OF THE STORY OF THE INTEGRATION OF GAS SUPPLIES APPEARS IN THE AREA BOARDS' REPORTS. THE YEAR UNDER REVIEW IS NO EXCEPTION, THOUGH PERHAPS LESS SPECTACULAR DEVELOPMENTS ARE RECORDED THAN HITHERTO. MAJOR PROJECTS IN MANY AREAS MAY HAVE BEEN COMPLETED, BUT IMPROVEMENTS IN DETAIL STILL GO ON AND NEW TECHNIQUES CONTINUE TO BE APPLIED.

AS gas demands increase—they have in 1960-61—greater pressures may be needed and larger compressor and booster plant will be installed. Bulk quantity underground storage possibilities will have a far-reaching influence on the type of plant installed for production, the use of conventional gas storage and the management of available gas supplies.

SCOTTISH: In the Scottish Gas Board good progress has been made with the construction of the high pressure supergrid and medium pressure grids. When linked to existing local mains these will form an integrated distribution system for gas from the Lurgi plant at Westfield and other sources of supply over an area of some 4,000 sq. miles in central Scotland.

In all 46 miles of the high pressure supergrid were laid, the major sections of which were to the southern end of the Tay Bridge, the south bank of the Forth at Coatbridge, and between Kilmarnock and Newton-on-Ayr.

Additions to the West of Scotland grid included the completion of the 6-in. main linking Strathaven to the Lanarkshire grid and the 8-in. connection of Wishaw and Carluke.

Completion of the grid linking Prestonlinks to Haddington, North Berwick and Dunbar enabled the works at the latter three places to be closed down.

The arrival of the linkage main from the Galashiels integration scheme at Peebles allowed gas production to cease there. Progress was also made in the Central and Northern Division with the laying down of a grid main between governor stations on the supergrid and individual works which are to be supplied from this source. A further 18 manufacturing stations were closed down on receiving bulk supplies, a total of 111 since vesting day.

Some 163 miles of new mains were laid, similar to last year, while the number of new services laid decreased by 15% to 11,206. Over 13 miles of mains were renewed and the total of services renewed fell by 30% to 8·672.

NORTHERN: In the Blyth Division radio-operated equipment has been installed between the central control room and the Stannington governor house to give automatic distance control. This is believed to be the first such installation in this country. At the Blyth works the diesel-driven booster capacity has been enlarged to meet increased gas demands in the Newsham area.

In Sunderland too an additional diesel-driven compressor of 200,000 cu.ft. per hour has been installed. An increase in the demand for industrial gas here has made necessary a high pressure distribution system in the Pallion area.

A 6-in. high pressure main laid to the control governor supplying the National Coal Board's washery at New Seaham has improved the district supplies in this area and should provide for the increased demand from new housing development in this district.

Some 31 miles of new main have been laid, of which some three miles exceed 6-in. diameter, while over eight miles have been renewed, and about

305 miles have been surveyed. A 3 mill. cu.ft. spirally guided gasholder has been commissioned at the Howdon works.

NORTH EASTERN: The use of reformed gas from the Whitby works has been extended by the laying of a main to Robin Hood's Bay, where the small carbonising plant has been shut down, and work on a similar pipeline between Whitby, Pickering and Morton will be part of the 1961-62 programme.

A link main from Scarborough to Filey is nearing completion and this will allow production to cease at the latter works. Work is in progress for supplying gas from the main grid system at Pudsey to Calverley and Yeardon, and at Sowerby Bridge for connection to the Hebden Bridge-Todmorden main.

NORTH WESTERN: No major changes have taken place in the Board's grid system during the year, 26 of the 46 production stations still being interconnected, while of the remaining 20, seven stations are associated with subsidiary grids.

Though there have been no complete works closures, carbonising plant at Partington and Wallasey has ceased production. Two miles of 15-in. main have been laid between Rossendale and Bury to complete their interlinkage, and new compressors have been installed at Garston, St. Helens and Warrington.

Some 800 miles of mains and 98,000 services have been inspected.

EAST MIDLANDS: Further integration has made possible the closing of works at Cleethorpes, Grimsby, East Retford, Epworth, Misterton and Gainsborough, all of which are now connected to the North Lincolnshire grid, and has thus reduced the number of manufacturing stations to 24 out of an original total of 104.

To effect further economies in gas production and to complete the remaining link of the 'backbone' main the laying of a 24-in. main has been begun between Whittington near Chesterfield in the Southern Production Region and the 12-in. high pressure grid system to the South of Sheffield in the Northern Production Region.

In the extensions to the North Lincolnshire grid, involving 37 miles of 12-in. and 9 miles of 8-in. main, and 35 miles across open country using the highly mechanised spread welding system, the average speed of laying was .75 miles per day with a maximum of 1.15 miles of 12-in. pipe. The net increase in mains was 240 miles; 10,885 services were also laid.

WEST MIDLANDS: The bulk of the work in this area has been to supply gas to new housing, and this is shown by 65% of the mains laid being 6-in. diameter or less. Of the 28,800 houses built in the area, 73% were equipped with gas. The net addition to the Board's mains was 144 miles increasing their total length to 8,582 miles.

Development plans are being worked out for the high pressure transmission system from the Lurgi plant now under construction at Coleshill. The first stage will include a main from Coleshill to Washwood Heath holder station, another from Coleshill to Coventry and a third from Washwood Heath to Swan Village, North Bromwich.

EASTERN: Of the 171 miles of main laid, 33 miles was bulk transmission and 138 miles was for distribution. With a net increase of 165 miles—182 miles a year previously—the total length of mains in the area is now 6,480 miles.

The main from Colchester to Clacton has been completed, by which Clacton is now connected to the Ipswich divisional grid and can now be base loaded. Brightlingsea is supplied through a branch from this main.

The link between Norwich and Beccles has almost been completed and has included two river crossings; one over the Waveney at Beccles and the other over the Yare at Norwich to the Cremorne Lane site. A new main has also been laid between St. Albans, Harpenden and Luton to reinforce the existing connecting main.

WALES: In the Eastern Section of the South Wales grid from which 59.5% of all gas is sold by the Board, an extension of the 16-in. bulk supply main from Bedwas to Roberstone has been completed, and work has begun on a link between existing grid mains at Ystrad Mynach and Quakers Yard.

The Mid-Wales gas grid was inaugurated by Sir Harry Pilkington last October. This now supplies six market towns in central Wales. The North Wales grid has now been extended to Nantlle Vale and work on a new branch pipeline to a new factory near Caernarvon has begun. An extension is also under construction from Llanrwst to supply Blaenau-Festiniog, Portmadoc and Pwllheli.

NORTH THAMES: The laying of a new 18-in. main between Beaconsfield and Woodburn has improved the capacity of the western side of the grid system, while the existing 12-in. main has reverted to a low pressure district main.

The development of a new technique for the installation and renewal of services virtually eliminates the screw threading of pipes and is economical in labour; it also gives a greater security against leakage.

The development of measures to prevent the corrosion of steel main has continued, and pipes coated with coal-tar enamel and others with epoxy-resins have been laid in commercial quantities to evaluate their corrosion resistant qualities.

SOUTH EASTERN: Development work in this Board has included laying nine miles of 12-in. welded steel main between St. Mary Cray and Sevenoaks, and work has begun on laying 12 miles of 12-in. welded steel from Sevenoaks to Tunbridge Wells.

During the year Sevenoaks, Mitcham, Rochester and Milton works have been closed, Mitcham being supplied from the South London main, and Rochester and Milton from the Isle of Grain system. Progress has been made on the modernisation of gasholder stations and seven more have become entirely automatic.

SOUTHERN: During the year under review 111 miles of main have been laid bringing the total length of the Board's mains to 6,132 miles. This includes extensions to the Basingstoke ring main system and the first section of a high pressure main from Totton to Fawley to supply housing developments there.

Three compressors, a booster and a station governor were commissioned at Cowley last October, and a scheme has been prepared and orders placed for diesel driven compressors at Southampton to operate at 100 p.s.i. to reinforce existing plant working at 30 p.s.i.

Three more holder stations have been converted to automatic operation during the year bringing the total of such stations to 59 out of a total of 69.

The distribution of drier gas has substantially reduced the amount of condensate to be removed by syphon pumping, and this has meant a saving in manpower and vehicle usage, as well as reducing internal corrosion of service pipes.

SOUTH-WESTERN: The commissioning of a bulk supply main from Exeter to North Devon has enabled eight small works to be closed; the main is 80 miles long.

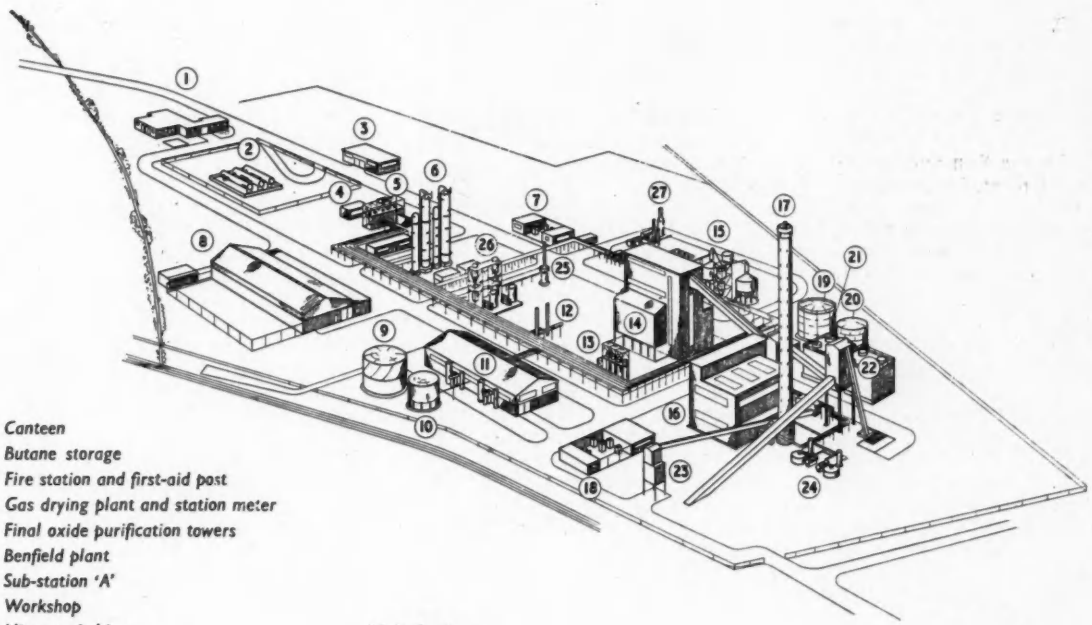
Progress in integration included a total of eight important links, among which were major projects between Weston-super-Mare and Highbridge, and Walford Cross and Lopenhead. Of the 108 works taken over at vesting date only 16 are now in production.

The speed with which emergency action was taken to supply 6,363 consumers in the Forest of Dean when a main on the Sharpness Bridge across the river Severn was carried away, demonstrated that by determined action, inconvenience to consumers may be reduced to a minimum.

PLANT DEVELOPMENT:

During the year the most important production plants commissioned were the intermittent chamber oven plant at Garston, Liverpool, a similar type of gas-making plant at Sunderland, the Lurgi plant at Westfield in Fife, a Segas plant at Reading and an MS reforming plant at Cambridge. Each of these plants has its own individual point of interest, but the Westfield installation, being unique in Britain, and having a high production capacity at elevated pressure, should be considered of outstanding importance.

1. WESTFIELD



1 Canteen
2 Butane storage
3 Fire station and first-aid post
4 Gas drying plant and station meter
5 Final oxide purification towers
6 Benfield plant
7 Sub-station 'A'
8 Workshop
9 Nitrogen holder
10 Liquid oxygen storage
11 Oxygen plant
12 Benzole absorbers
13 Lurgi after-coolers
14 Lurgi house
15 By-products area
16 Boiler house
17 Chimney
18 Sub-station 'B'
19 Lock gasholder
20 Effluent storage tank
21 Cooling towers
22 Coal screening plant
23 Ash bunker
24 Acid gas disposal plant
25 Start-up heater (for carbon monoxide conversion plant)
26 Raw gas carbon monoxide conversion plant
27 Ammonia treatment plant

THE first stage of the Lurgi plant project at Westfield in Fife has now been completed and is producing 15 mill. cu.ft. of gas a day. When the second stage is completed in a few months' time this output will be doubled to 30 mill. cu.ft. of gas a day, equivalent to one-fifth of the present total demand for gas in Scotland.

A high-pressure pipeline now under construction across central Scotland, when linked with existing grid systems, will enable gas from Westfield to be distributed over an area of 4,000 sq. miles.

Laid out on a 45-acre site which was largely peat bog, the Westfield plant involved major civil engineering works being undertaken before construction of the plant could begin.

A suitable low rank non-caking opencast coal for processing in the Lurgi gasifiers is obtained from the adjacent workings of the Opencast Executive of the National Coal Board.

This coal as charged consists of a mixture of washed coal, size 1½ in. to 1 in., to which a proportion of middlings of high ash content from the washery has been added.

The total ash plus moisture content of the coal charged is maintained at 30%, its calorific value is in the neighbourhood of 8,600 B.t.u. per lb.

The Lurgi gasifier is a mild-steel high pressure vessel of fusion-welded construction approximately 19 ft. high overall with an outside diameter of 10 ft.

The coal enters through a lock-hopper attached to the top of the gasifier; steam and oxygen at high pressure are introduced at the lower end; and the gas is generated by the reaction of steam and oxygen with the coal at a pressure of about 30 atmospheres. Each gasifier produces upwards of 7½ mill. cu.ft. of gas a day. Normally with the present output of the works two are in use with one as a stand-by.

Charging of the Lurgi gasifier is carried out by hydraulically-operated gear under the control of the Lurgi house attendant.

Crude gas

Crude gas leaves the gasifiers at a temperature of between 400 and 450°C. Liquor is sprayed into the gas in a quench cooler, and its temperature is reduced to about 196°C.

The gas passes from the waste-heat boilers to a precooler and from thence in twin streams to another installation of coolers.

Benzole is removed by washing with light oil under a pressure of 384 p.s.i.g., and carbon dioxide and hydrogen sulphide are then removed by passing the gas through the Benfield plant, in which absorption in a 35% solution of potassium carbonate at high pressure and at a temperature of approximately 110°C. takes place.

The solution leaves the absorber and, after a reduction of pressure from 325 p.s.i.g. to 5 p.s.i.g., passes to a regenerator vessel where conventional steam stripping is carried out at the same temperature.

The acid gases leaving the top of the regenerator towers consist of approximately 98% of carbon dioxide and 2% of hydrogen sulphide. After being cooled they pass to a catalytic conversion plant where all hydrogen sulphide is oxidised to sulphur dioxide. The waste gases are then mixed with boiler flue gases and finally pass to the main chimney stack. Plant for the recovery of sulphur in its elementary state from the waste gases will be installed during the second stage of the construction of the works.

Further stage

A further purification stage is necessary to comply with statutory requirements before the gas passes into the grid main. In the Bischoff system of oxide purification, the gas passes through two streams each of four towers designed to operate at a pressure of 340 p.s.i. The system operates on the principle that the oxide is removed in rotation from one tower to another at specific intervals and the towers themselves always remain in the fixed rotation order.

After drying, the purified Lurgi gas is 'conditioned' so that its calorific value and specific gravity correspond to district requirements. With a calorific value of 400 B.t.u. per cu.ft., the gas is at present enriched to 450 B.t.u. by the addition of butane, supplies of which are brought in by road from Grangemouth oil refinery, 35 miles from Westfield.

High pressure steam for the Lurgi gasifiers is raised in two Babcock and Wilcox bi-drum boilers, each capable of raising 45,000 lb. of superheated steam per hour at 450 p.s.i. and 730°F. A third boiler is under construction for stage 2 of the project.

The production of high pressure oxygen for the Lurgi gasifiers is by the Tonnox plant, the first to be built on any British gasworks. In this plant air is liquefied and the nitrogen and other constituents separated.

The liquid oxygen fraction is continuously withdrawn and compressed while still in the liquid state to a pressure of 426 p.s.i. in a pump of Byron-Jackson design operating at −183°C.—the temperature of liquid oxygen.

Vaporisation of the liquid takes place in a heat exchanger, after which it is preheated and passed to the Lurgi gasifier at the required pressure of 426 p.s.i.

To safeguard against unforeseen stoppages in oxygen production, it was decided to install a 560-ton liquid oxygen storage, from which supplies of gaseous oxygen could be drawn in cases of emergency or during the 'defrosting' of the plant.

Electrical power for the plant is taken from the South of Scotland Electricity Board's system through two feeders at the 7-panel switchboard in the main incoming substation; provision also being made for a third emergency supply in the event of failure of the main feeders.

An automatic diesel alternator set capable of supplying electricity for a 420-kW. load within 30 seconds of a mains failure has also been installed in case of emergency.

To raise the specific gravity to .5 or thereabouts, the gas must be 'conditioned' by adding heavy gases such as carbon dioxide or nitrogen and a gas of high calorific value, such as butane to raise the c.v. to the declared value of 450 B.t.u. per cu.ft. as referred to earlier.

Carbon dioxide 'slip

In practice a controlled carbon dioxide 'slip' will be allowed to occur at the Benfield plant, though a controlled quantity of nitrogen may also have to be admitted.

The carbon monoxide conversion plant will be of the catalytic type and, installed at the outlet of the waste heat boilers, will treat hot Lurgi gas at about 107°C. It will make use of the water vapour in the gas to promote the shift reaction without recourse to high pressure steam from an external source.

This plant will in fact be the first 'raw gas conversion plant' to be installed outside Germany.

2. CAMBRIDGE

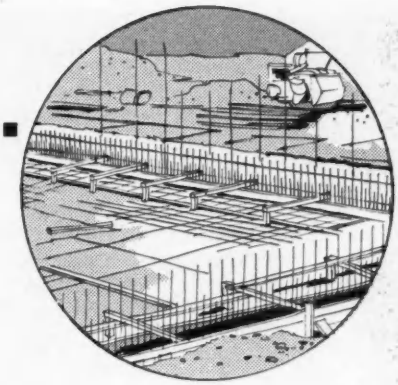
THE MS gas-making plant at Cambridge, the first of three such plants to be commissioned in Britain, consists of two reforming units, each with a capacity of 1.08 mill. cu.ft. of gas per 24 hours.

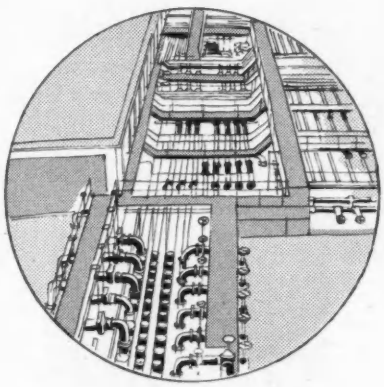
Invented and developed by Stein and Roubaix of Paris, in co-ordination with Gaz de France, it provides a relatively cheap source of peak load gas. P.f.d. and refinery gas are both suitable feedstocks; the former is used at Cambridge followed by cold enrichment.

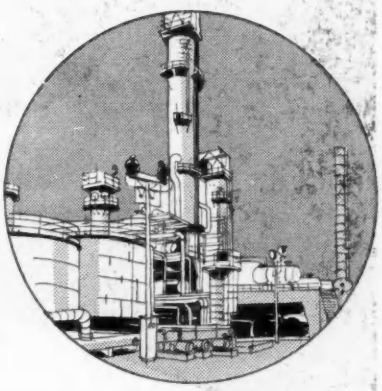
Each unit consists of a cyclic catalytic reformer, a waste heat boiler and a primary scrubber. A secondary scrubber, a naphthalene washer, a tar-liquor separating plant and exhausters are common to both units. Cold enrichment takes place at the entrance to the relief holder, and the gas now at a c.v. of 480 B.t.u. per cu.ft., joins the main gas stream as it enters the main purifying plant.

Cyclic control of the reforming process is by the temperature of the catalyst, and so pyrometers in the catalyst

VERSATILITY...







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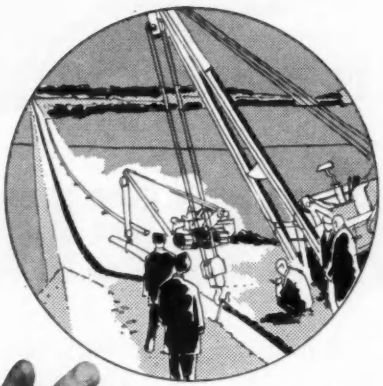

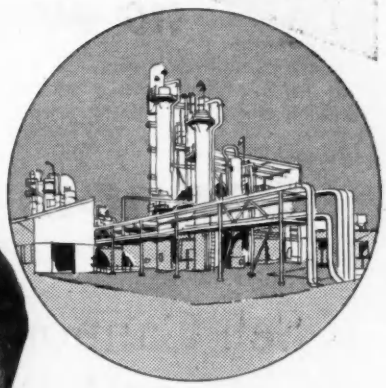

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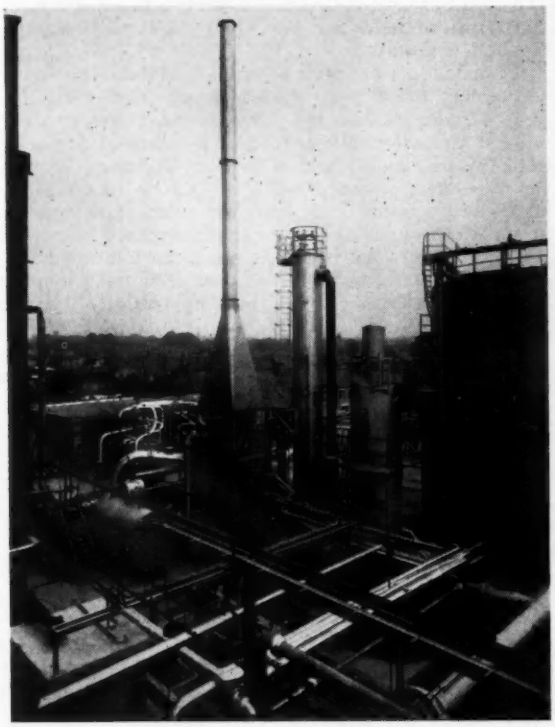


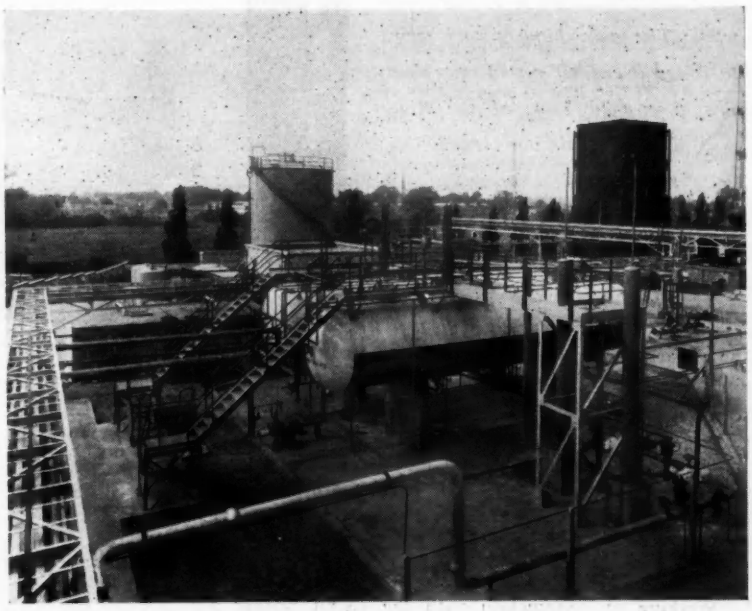
An overall view of the MS plant at Cambridge showing the control room on the extreme left and the reforming vessels just in front of it. One waste heat boiler is seen at the base of the stack, with the primary and secondary scrubbers between it and the relief holder on the right of the photograph.

bed actuate the special automatic operators in the control room, by which the phases of the cycle are changed. Electrical equipment provides a catalyst temperature being maintained at 950-970°C. by the combustion of p.f.d. at which temperature the gas-making phase will automatically begin. When it falls below this temperature, the plant reverts to the heating phase. It may be kept on 'standby' at 850°C. During the 'make' phase, steam, air and p.f.d. in controlled quantities enter the reformer, pass through the catalyst bed, and after the reaction the reformed gas enters the ancillary plant and finally the relief holder; control of the exhausters prevents the holder dropping below 25% of its capacity.

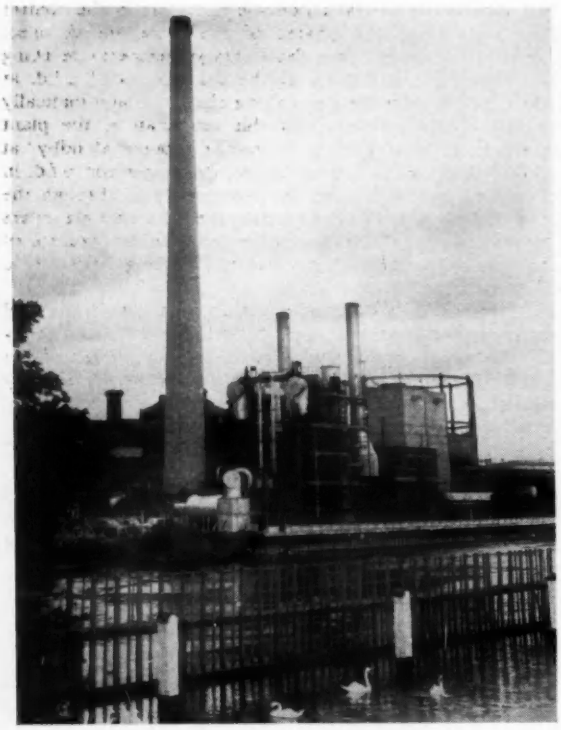
Storage of l.p.g. and p.f.d. occupy the greater part of the area allotted to this plant; this is because of the severity of the precautions demanded to avoid an outbreak of fire and its spreading. That for l.p.g. consists of two horizontally mounted cylindrical tanks holding a total of 40 tons, protected by temperature control equipment and surrounded by a chain-link fence, while that for p.f.d. is in two vertical tanks built on reinforced concrete platforms, each with a capacity of 90,000 gal. and surrounded by primary and secondary bunds. Arrangements for foam generation in case of fire, and temperature control in hot weather are included.

3. READING

THE new Segas plant at Reading will increase potential gas production there by 7 mill. cu.ft. per 24 hours. Consisting of a pair of two-vessel units worked synchronously to give as nearly as possible, a steady output of gas, the plant will gasify medium fuel oil of 950 seconds viscosity,



The fuel storage area at the Cambridge works, showing the two horizontal storage tanks for holding l.p.g. and in the background one of the vertically mounted tanks for storing p.f.d. In the right background is the cooling tower for washing water from the primary and secondary scrubbers. In the immediate foreground can be seen the two steam-heated vaporisers for l.p.g. treatment before it enters the enrichers.



two twin-cell concrete cooling towers, capable of cooling 35,000 gal. of water per hour from 112°F. to 60°F., at a wet bulb temperature of 52°F.

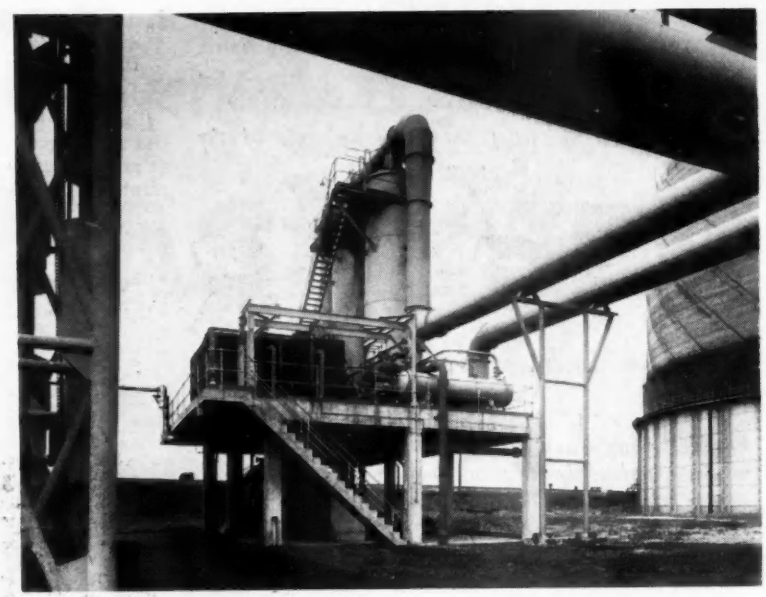
Additional purifier plant consists of an installation of 12 Gastechnik towers with a total capacity of 8 mill. cu.ft. per day, and includes the necessary pellet screening and sulphur extraction plants. Steam is raised at the Segas plant by two similar boilers working at 130 p.s.i.g., one on waste heat recovery and the other by an oil burner firing into a special refractory chamber. Low pressure steam is recovered from steam driven ancillary machinery.

The control room in which are located the hydraulic operators is fully instrumented, and alterations to plant working can be made from here by remotely operated hydraulic valves.

Tanks for the storage of p.f.d. have been erected at King's Meadow, a 15-acres site on the further side of the two mainline railways. Each with a capacity of ¼ mill. gal., two vertically mounted cylindrical tanks, stand in their own bunds. All precautions have been taken for cooling the tanks in an emergency, and full fire-fighting facilities have been provided.

A new compressor plant in connection with the 'back-bone' main, a branch of which has been laid between Reading and Cowley has been built across the river at the other end of the works, and includes four Bryan Donkin compressors, each of 250,000 cu.ft. per hour capacity, two driven by diesels and two by electric motors.

The distribution control room is fully instrumented and includes remote control of valves in the 'back-bone' main at Ipsden. A gas-drying plant of 2 mill. cu.ft. an hour capacity has also been installed.



From slightly up-stream of the works, the new Segas plant at Reading appears as a compact and well integrated whole. The main chimney stack seems to tower over the rest of the plant. The sheet-piled bank of the River Kennet stands out clearly.

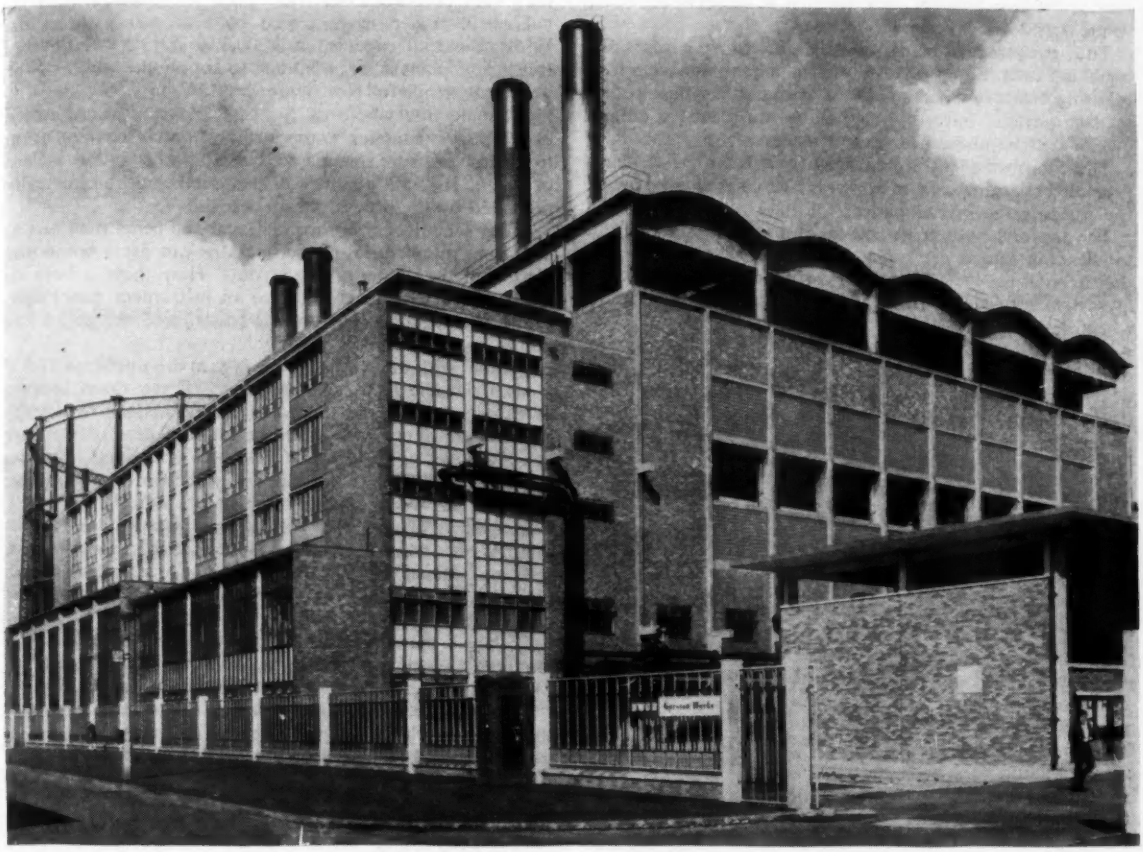
and when modified, p.f.d. with an increase in potential output of some 14%.

The gas-making section of the plant consists of a combined steam preheater and vaporiser and a combined reactor and air preheater. The latter is divided by a honeycomb refractory dome which supports the catalyst.

The gas from each unit, after passing through its own washbox, enters the Lymn washer, through which water is circulated. After being washed for naphthalene, the gas is passed by the exhausters through the electrostatic detarrer to the relief holder.

Working in conjunction with the Lymn washer are

A close-up view of the gas-drying plant at the new compressor station on the other side of the River Kennet. The brine tank and the coolers can be clearly seen.



The chamber house at Garston is of a particularly modern design. The barrel roofs make it possible to do away with any internal supports. The electrical generators, the waste heat boiler plant, and the amenity section are housed in the fore-part of the building.

4. GARSTON

THE new carbonising plant built at Garston, in the Liverpool Group of the North Western Gas Board, has added 14 mill. cu.ft. of coal gas a day to the potential output. In spite of the advantages offered by a c.v.r. plant an i.v.c.o. plant was chosen because of its increased flexibility and its ability to carbonise small coals successfully.

The new and existing plants, two separate and distinct carbonising plants, need coal of different qualities in differing quantities. The 14 mill. cu.ft. a day i.v.c.o. plant will carbonise 1,000 tons of coal a day and the 4 mill. cu.ft. a day c.v.r. plant, 250 tons a day.

The capacity of the coal handling plant to meet these conditions was designed to deal with 1,750 tons of mixed i.v.c.o. and c.v.r. coal in an eight-hour day. Based on a 10-ton wagon, this meant that each section of the sidings must be laid out to accommodate 175 wagons at any one time, though the possibility of the increasing use of larger capacity wagons was kept in mind.

Two winch-operated beetles, each capable of handling 12 wagons, draw the wagons on to the tippler table. As they are unloaded they are pushed clear by the next full wagon and gravitate to the coke loading sidings.

The points on the track between the tippler and the coke loading section are electro-pneumatically operated from an elevated cabin built near the tipplers, from which the operator has an unrestricted view of that part of the sidings.

Helped by a mimic diagram, he can direct traffic to suitable coke loading points, as well as being responsible for the weighing of full and empty wagons. He is in touch by telephone with British Railways' signalling control points as well as other parts of the works.

Coal is unloaded by two Strachan and Henshaw Rotoside tipplers with a capacity of 30 wagons per hour, which can accommodate wagons up to 25 tons net weight.

Coal is withdrawn from the concrete tippler hopper by Sherwin electro-magnetic vibrator feeds to twin 42-in. belts with a capacity of 300 tons per hour on which magnetic tramp iron separators have been provided. A mimic diagram of the conveyor system enables the plant operator to route the coal as needed. Sequence starting allows a central switch control system.

Coal may be taken, (1) to the c.v.r. retort house by an 80-ton per hour single-belt conveyor, (2) to the i.v.c.o. chamber house by a 300-ton per hour 36-in. belt system via a transfer tower, (3) to a 700-ton storage bunker by a 36-in. reversible shuttle band conveyor capable of filling

any of the five bunkers into which it is sub-divided, or (4) to an outside stocking area.

The gas-making plant consists of four independent benches, each of 35 3¼-ton vertical chamber ovens carbonising either washed smalls or slacks. The benches are in four parallel lines, two of which are placed each side of the central mechanical gas producer plants.

The chamber ovens are charged by overhung electrically propelled charging cars, in which is also carried coke breeze for forming the breeze pad at the base of the charge.

The top and bottom gas off-takes are both unsealed, the top leading into a dry main. For the first four hours of the carbonising cycle the bottom off-takers are open; steam is admitted towards the end of the carbonising schedule which may vary between 14 and 24 hours.

Coke is discharged from the oven by hydraulically operated, water sealed discharge doors into a coke car, which is propelled by electrically driven haulage chains to the quenching tower outside the chamber house.

Unusual feature

The chamber house is undoubtedly a most unusual feature of the new extensions. It is divided into four main sections, the No. 1 and 2 chamber houses, the producer house which lies between them and the 'forepart' on the boundary wall side of the other three sections, which houses the boiler plant, the power generation plant, and the cloak rooms and canteen, etc., for the whole of the works.

The structure is of reinforced concrete frame and brick panelling and five barrel vault sections in 2¾-in. concrete form the roof of each chamber house, the width and span of one section of which is 32 ft. by 98 ft. These barrel vault roofs, the soffits of which are 90 ft. above ground floor level, are supported on post-tensioned valley beams.

Fuel gas to the benches is generated in six Humphreys & Glasgow mechanical producers, each with a designed output of 200,000 cu.ft. an hour of producer gas. They are fitted with self-clinkering grates, cyclone dust extractors and jacket boilers raising steam at 20 p.s.i.g.

Producer gas is fed into a common main, the pressure in which is controlled by an Askania governor operating a butterfly valve in the air supply main.

Flexibility is the outstanding feature of the power production section of the new extensions. Although a very careful steam power balance had been worked out allowing for daily and seasonal variations in plant loads and great care has been taken in determining waste heat production figures, many variables which cannot be controlled may affect these calculations.

High steam pressure

There are four waste heat and two oil-fired boilers divided equally between the two sections of the chamber house, all raising steam at 325 p.s.i.g. and 715° F., a higher steam pressure than in any other British gasworks.

Each waste heat boiler with a heating surface of 4,250 sq.ft., has a maximum rating of 10,000 lb. of steam per hour from waste gases at 650° C.

With superheaters in the hot gas path, a final steam temperature of 715° F. is reached, which is regulated by desuperheaters automatically controlled. Steaming type economisers reduce the temperature of the final exit gases to 200° C.

The oil-fired boilers, for standby purposes only, are generally only raising enough steam to maintain a constant pressure in the high pressure steam main. Their output may vary between 2,000 and 13,000 lb. of steam an hour.

Electric power is generated by two turbo-alternators. With an output capacity of 2,200 kW at 11 kV, 50 cycles this power plant is large enough to supply the whole of the works' demands for electric power.

Normally the whole of the high pressure steam raised at 325 p.s.i. is supplied to the turbines, which pass out steam to the low pressure steam system at 20 p.s.i.g. and a vacuum of 28 in. Hg., the quantity of passout being automatically regulated by the process steam demand.

From a control room located near the generating sets at operating platform level, the operator can get a composite picture of the whole power layout. Here there is both an electrical control panel and also an instrument panel indicating the steam flows from the boilers and at various key points in the steam system.

Parallel with the works power system are duplicate 11-kV feeds from the local grid supplies. These three sources of electrical power are connected to the main high voltage switchboard through 400-A circuit breakers. To ensure continuity of power supply, this board, divided into two sections by a bus coupler, supplies transformers at strategic points in the works through duplicate 11-kV cables.

In the works as a whole the prime movers are electric motors but where reliability and ease of control have been considered of paramount importance, steam drives have been employed, as in the exhauster and standby booster drives.

To treat the gas from this new carbonising plant, a number of items of ancillary plant has been added but wherever possible existing plant has been adapted.

The gas leaves the chamber house in two streams, each stream, equivalent to 7 mill. cu.ft. of gas a day, being treated separately until it has passed the purifiers.

Tray purifiers

Tray purifiers, installed by the Board's Construction and Maintenance department consist of two 5-box sets in parallel, each with a capacity of 7 mill. cu.ft. a day. Each box holds a total of 250 tons of oxide contained in 18 trays, 13 ft. 6 in. square by 3 ft. 6 in. deep.

The gas emerging from the benzole scrubbers passes through the station meters to the existing gasholders.

The capacity of the existing gas boosting plant has been increased by installing two Bryan Donkin machines of 600,000 cu.ft. an hour with a pressure rise of 4 p.s.i.; each is directly coupled to 316-h.p., 415-V electric motors driving through scoop controlled fluid couplings, the scoop movement being controlled by a servo-governor from the booster outlet main.

Coke from the chamber house, after quenching, travels by belt conveyor to the new screening plant. This plant together with the conveyor system is another feature of the new extensions.

Coke travels by twin 30-in. troughed belt conveyors at the rate of 60 tons an hour by way of a junction tower to the coke grading plant. The distance covered by these two sets of conveyors is considerable, the first being set at 600-ft. centres and the second being housed in an aluminium sheeted gantry of 135 ft. span.

All coke above 3 in. is separated by one of two grizzley scalping screens and passes to the oversize compartment of 375 tons capacity by way of a 3-way chute, one leg of which is fitted with a spiral lowering chute to reduce breakage during its progress.

Graded coke may be loaded over travelling and fixed Viking debreezing screens into lorries or railway wagons.

Coke may also be fed to a 30-in. belt of 80 tons an hour capacity, travelling at 220 ft. a minute, for transport to additional rail wagon loading sidings. Travelling by way of a junction tower and an intermediate coke house, where it is debreezed at the rate of 80 tons per hour on a single deck high speed vibratory screen, the coke is delivered to the main loading bay 250 ft. away.

Here the coke is transferred to a 30-in. belt running the full length of the 350-ft. bay. A travelling throw-off carriage transfers the coke to a travelling bridge equipped with a conveyor from which there are discharge points located over five lines of railway track.

By this means empty wagons direct from the coal tippers are filled with coke and made up into trains.

5. SUNDERLAND

IN 1956, the Northern Gas Board decided to reconstruct the Hendon gasworks at Sunderland, and to increase its gas-making capacity from 3.150 mill. to 8.0 mill. cu.ft. per day (nominal) which becomes, in effect, 9.5 mill. cu.ft. per day after dilution with producer gas to 475 B.t.u. per cu.ft.

Gas manufactured at the works augments the supply to consumers in Sunderland and outlying districts and any surplus will enter the North East Coast gas grid for transfer to adjoining divisions.

Investigations were made into the likelihood of subsidence due to coal mining under the site. A 330-ft. wide barrier of coal, running diagonally across the site has been left, so that little subsidence due to mining should take place even though partial extraction of coal may be practised at some time in the future.

The new carbonising plant consists of two independent units arranged side by side, each of which is divided into two benches, and each bench comprises 18 C.O.L. intermittent vertical chambers arranged in three settings of six chambers each. These 72 chambers, after making due allowance for scurfing, are capable of carbonising 540 tons of coal per 24 hours and producing a total of 8 mill. cu.ft. of gas.

Independent unit

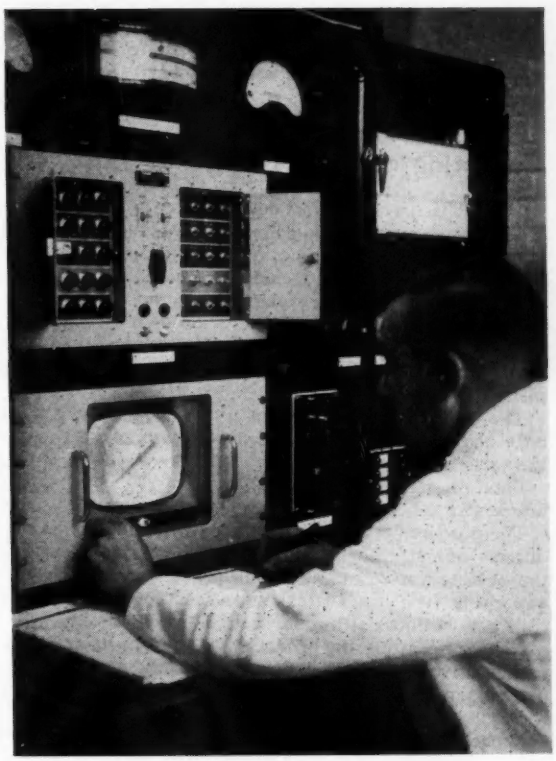
Each setting of chambers is built as an independent unit which is free to expand vertically, and allowance has also been made for the accommodation of horizontal expansion.

The recuperators for pre-heating the air for combustion are built monolithically with the settings from standard tongued and grooved bricks. The supply of secondary air to the settings, admitted through cast-iron boxes is regulated by slides and graduated scales. The bottom doors and frames are manufactured from a special heat-resisting metal and each door is provided with a machined knife edge which makes a gas-tight metal-to-metal joint with a machined facing on the underside of its corresponding frame.

Each door is opened by gravity and closed hydraulically, but a hand-operated winch of the worm-reduction type, supplied for each bench, can be operated quite easily by one man in cases of emergency or complete hydraulic failure.

Gas passes through a mild steel, refractory-lined offtake pipe into a common collecting main extending the full length of the bench and flows through two risers into the foul mains. Askania governors installed in each foul main, are accessible from the charging-floor level.

The chamber house which also houses the gas producer plant, is independent of the benches, and its framing consists of self supporting welded steel bents. It is roofed and side clad in aluminium sheeting; the roof sheets are specially perforated to provide ventilation and there are four large areas of ' curtain wall ' glazing.



An operator at the Hendon works, Sunderland, can read dials in five different sections of the plant by closed circuit television. The cameras can be adjusted and directed by remote operation from the central control room.

The separate bunkers for the coal and pad coke provided for each bench, are of reinforced concrete construction, and each with a capacity of 270 tons of coal and 40 tons of pad coke, the bunkers are built in pairs.

The coal sections of each bunker are provided with nine outlets and the pad coke section with three outlets.

In an instrument room placed on the centre line of the installation at top of setting level are housed the main recording instruments, mounted on a curved panel and all fixed at the same level.

This arrangement permits observation of the instruments by one of five television cameras collecting data from various points of the plant, all of which are remotely controlled from a control room at ground level where the receiver is located.

The coal handling plant has a capacity of 120 tons per

hour, and sequence control is provided throughout. All gantries are sheeted both on roof and sides with corrugated aluminium sheeting.

The coal and pad coke are fed into the vertical carbonising chambers by means of charging cars.

The coke is discharged from the base of the chambers into electrically-propelled hot coke cars. With its load of hot coke the car travels to a quenching station—of which there are four situated inside the house—where the coke is quenched by a pre-determined volume of water.

Passing from the quenchers the container is lifted from the car by one of two telpher crabs, travelling on a track carried on a reinforced concrete structure, which spans the inclined coke wharves.

At the coke wharves provision is made for spot quenching of the coke, and the coke is discharged through finger gates.

Collecting conveyors

Two collecting conveyors deliver the coke to two further inclined conveyors feeding the coke grading plant, which consists of two identical lines of screens, each with a capacity of 40 tons per hour; included too are a scalping screen of the vibrating double deck type and a sizing screen of the reciprocating type, with an interposed common coke cutter to deal with oversizes as and when required. Sequence control is provided for conveyors and screening plant.

The coke storage bunker has a capacity of 800 tons of coke and is divided into five compartments of sizes to suit the various grades of coke.

Four pre-set automatic weighers, complete with special hoppers have been provided to weigh coke into 1-cwt. bags.

The producer-gas plant comprising four mechanical producers—one stand-by—supplies the diluent gas as well as the heating gas for the carbonising plant. Of the self-vaporising type, each is capable of gasifying 32 tons of coke per 24 hours at normal load.

Air for operating the producers is supplied by two electrically-driven blowers. Four dust-catchers of the Vortex pattern lined internally with firebricks are provided, one for each producer. Producer gas pressure in the mains is automatically maintained at the desired pre-determined value by Askania control of the primary air.

Ash discharge

Ash is continuously discharged from each producer to a belt conveyor running under the house floor, which transports it to a reinforced concrete storage hopper built integrally with the main junction tower. From here it is discharged directly to either road or rail vehicles.

The four Spencer-Bonecourt horizontal waste-heat boilers in the carbonising house are designed for a working steam pressure of 250 p.s.i. with a superheat of 200° F. Each is capable of handling the waste gas from one bench of chambers. Full instrumentation is provided.

A remotely controlled television camera in each boiler room can scan the relevant gauges and instruments for the attendant in the control room to record the necessary instrument readings at set intervals.

A high-pressure steam ring main supplies the turbo-alternator, and a separate, saturated steam main supplies the back pressure engines driving the exhausters—the exhaust steam from this system, which is contaminated with oil, is used for steaming the retorts. Pass-out steam from the turbo-alternator is fed into the low-pressure steam main for the ancillary plant. In the event of a deficiency of low-pressure steam, the pressure is maintained through a 'make-up' valve from the high pressure main, while a surplus is catered for by a blow-off valve.

Each of three welded mild steel vertical water-tube condensers of the modern cross-flow design, is capable of efficiently cooling 4 mill. cu.ft. per day and each has incorporated a boiler feed water heater designed to preheat 1,000 gal. per hour of softened town water. Remote indicating temperature points on water and gas mains have been fitted, together with a thermostatic water control valve operated by the temperature of the gas leaving the condensers.

Three double impeller positive Rootes-type steam-driven exhausters, one stand-by, handles 200,000 cu.ft. of gas per hour against a total pressure differential of 55 in. w.g., and working in parallel pump the gas through a single 30-in. diameter welded stress-relieved gas main to two electrostatic detarrers.

The purifier installation consists of five mild steel welded purifying towers 22 ft. 3¾ in. diameter by 53 ft. high, each of which will contain 12 trays filled with 38 tons of iron oxide. It is capable of purifying 9.6 mill. cu.ft. of gas per day, containing 700 grains of H_2S per 100 cu.ft. The design of the towers gives an R value of 37.4.

Hydraulic valves are provided for 'rotating' each tower in a chosen sequence; each tower is also provided with its own Newton needle steam-heated gas heater.

A fully automatic benzole extraction plant, designed to remove from the gas 85% of the crude benzole and 70% of the carbon disulphide present, can reduce the naphthalene content to one grain per 100 cu.ft. with an oil circulation rate of 6,850 gal. per hour.

Electrical power

Electrical power for the new works, as well as for plant still in use on the original works is obtained from a pass-out turbo-alternator of 765-kW capacity supported by a 750-kVA transformer connected to the North Eastern Electricity Board's supply system.

The closed-circuit television system, installed to enable the assistant in charge of the control plant to view plant and take readings of unattended plant and equipment, has a 8½-in. monitor, based on a 625 line system. Equipped with pan and tilt, there are lens change and focusing remote controls, and a 5-way camera switching unit installed in the control room.

A loudspeaker system, which includes eight microphones and eight loudspeakers provides communication between personnel working on the coal charging car at bench top level, and those operating the bottom doors and coke car at ground-level. Two microphones and two loudspeakers are installed on each bench.

New British Standard

MATERIALS and constructional requirements for back boilers for use with domestic solid fuel appliances are laid down in the new British Standard for back boilers for use with domestic solid fuel appliances (B.S. 3377 : 1961).

Boilers for independent domestic hot water supply or central heating are not dealt with, as they are already covered by other British Standards.

Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1., price 3s. each (Postage will be charged extra to non-subscribers).

WOMEN'S GAS FEDERATION

Approach to women's organisations succeeds

By JESSIE FRITH, General Secretary

THE past year has seen a wider development of the work of the Federation. This has been envisaged for a long time. It had been felt that it was time to extend the platform provided by the Federation to reach other women's organisations. To achieve this, a great deal of work had to be done behind the scenes—it actually took two years to 'sell' the idea to all concerned, but it eventually culminated in the meeting arranged for the leaders and representatives of 32 women's organisations when the Minister of Power and the Chairman of the Gas Council were the speakers.

The meeting was an unqualified success, and similar meetings will now become an annual event in the programme of the Federation. It is also hoped that they may be extended on a regional basis.

A platform

One of the uses of the Federation to the gas industry is to provide a non-commercial platform to enable the views of both sides to be heard—something which strangely enough is looked upon with suspicion by some members of the industry on the grounds that it is encouraging the domestic consumer to 'air' views on controversial and thorny subjects, but surely this ostrich-like attitude is hard to understand, and it is much better to 'grasp the nettle' and know what is in the minds of the customers so that some of the bogies which exist may be cleared away.

There is also a section of the industry which thinks there is nothing the Federation can do which the industry cannot do better—it has never been suggested that the Federation is the only approach to the domestic consumer—it is obviously only one of them—but one, it is suggested, which should not be overlooked.

Informal approach

A great many people are more receptive to the informal approach than to the commercial one, and much useful work is done, and more could be done, in the branch meetings by having five minute 'flashes' on new appliances.

In May, the fifth Residential Conference of the Federation was held in Blackpool and was attended by 500 delegates from all parts of the country—on the afternoon of the annual general meeting no fewer than 1,100 members attended and were addressed by Sir Henry Jones.

Even in Blackpool, which deals in what can only be described as a conveyor belt system of conferences, this was looked upon as being a record meeting of women.

Just recently the second Scottish branch conference was held in Glasgow. The principal speakers were Mr. J. C. George, C.B.E., M.P., Parliamentary Secretary, Ministry of Power; Mr. Sydney Smith, C.B.E., Chairman of the Scottish Gas Board, and Mrs. L. W. Roberts, Chairman of the Women's Gas Federation.

The Countess of Mar and Kellie, a Vice-President of the Federation, introduced Mr. George and welcomed the 165 delegates.

The fact that such distinguished speakers attended the conference is a measure of the growth of the Federation in Scotland.

On the educational side of the Federation's work the accent has been on youth, and 209 students have taken the Federation's examination 'for students of housecraft and catering on the use of gas,' an increase of 40% on last year's figure.

Never higher

The Federation naturally has its weaknesses and its critics, but generally speaking its status has never been higher, particularly in the field of women's organisations where it is looked upon as a lively and vigorous body, and this is an important section of its work.

Among the majority of its members there is an enthusiasm and loyalty to the industry which is worth more attention than it sometimes receives.

GAS FIGHTS BACK —Continued from page 129

be confused with a reprieve. The breathing space is most valuable, but it is unwise to expect that it will last as long as one would like.

The most apposite comment on the present condition of the gas industry was made by Mr. David Beavis at the recent centenary annual general meeting of the Scottish Association of Gas Managers, and I hope he will not mind if I repeat his comment:

> *'The industry has so often complimented itself on good customer relations and efficient and unfailing service that it has encouraged within its ranks a complacency not always justified by the facts and voiced a satisfaction not invariably shared by its customers.*
>
> *'Further, there is still within our calling a widespread but unreasoning belief in the security and permanence of the gas industry. A faith which is not based on logical foundations is perhaps the great danger to our prospects in years to come.*
>
> *'The customer has no vested interest in the affairs of individual fuel industries and so our continued participation in any sector of the fuel market, domestic, commercial or industry, depends only upon how the composite attractions we can offer in terms of economy, effectiveness and service compare with other fuels.'*

A year of solid achievement —Continued from page 133

ing and experienced men but there are all too few of them.

The industry is under-staffed in this respect at the moment and the numbers are not growing nearly as rapidly as they should. Each engineer is responsible for a very large gas load indeed and under the highly-competitive conditions of today, the engineer has to devote practically all his time to keeping this load.

This is the more to be regretted because, as this short review has shown, the gas industry has an ever-increasing accumulation of industrial expertise which is ready to be deployed for the benefit of the end-user.

The results of research and experience have to be assimilated and then spread out through the industry. By and large, the machinery exists within the Gas Council whereby this part of the process is successfully effected.

There can be no doubt that the gas industry has the capacity greatly to increase its sales to industrial consumers beyond the 1960-61 level.

GAS HEATS
NEW DULWICH
FLATS BY
WARMED AIR
This is one of eight multi-storey blocks of flats being built by Wates at Dulwich. Altogether they will comprise nearly 300 flats. A feature of special interest is the Halcyon ducted warmed air heating system installed in each flat. (A Clifford gas drying cabinet is also part of the equipment). The installation of ducted warmed air is a further example of the trend by both private developers and local authorities to choose low cost gas for heating.
Gas saves time, work and money
Thermostat and clock controls
Cheap to install in your new home
GAS warmed air
for low-cost central heating

Area board advertising has tended to spotlight specific installations in full-column layouts. The example shown is one of a series presented jointly by the London Boards.

THE PATTERN OF

as demonstrated by the Gas Council

Putting the accent on youth at this year's Ideal Home Exhibition was this pop music-based theme of Mr. Therm's Top Ten. Visiting recording stars helped promote interest.

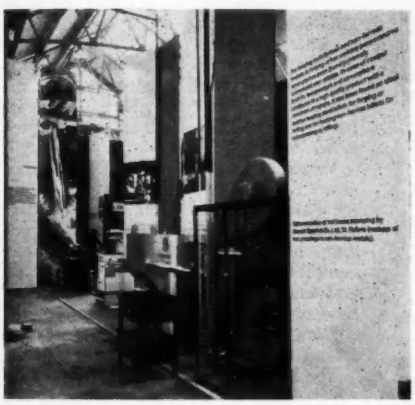
A newcomer to the exhibition field was a show dealing with heating and ventilating. As the picture shows, coke was strongly featured as well as gas, on the Gas Council stand.

Cover advertisements in colour and more half-pages in the nationals characterised industrial gas advertising. More use was made of editorial double-page spreads like that shown left usually reprinted as leaflets.

GAS PUBLICITY

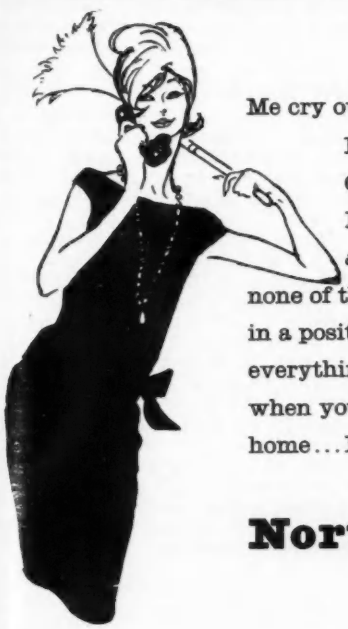
and some of the area gas boards

An important annual show, the Edinburgh Evening News *Ideal Home Exhibition always has strong participation. This year's Scottish Gas Board stand brought in over £10,000 worth of business.*



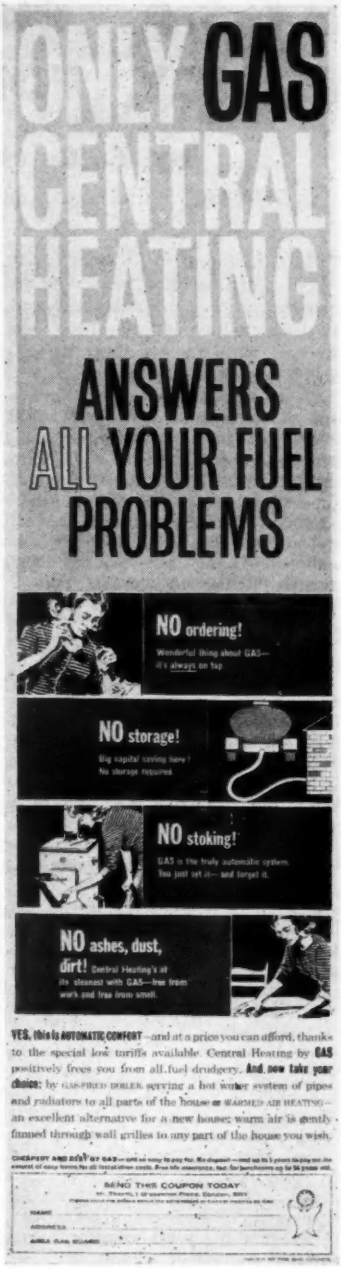
This month saw, at Manchester, the largest exhibit of gas-fired equipment ever housed in the North West. More than 40 large industrial firms from all over Great Britain combined with the North Western Gas Board to stage the exhibit. Note the bold manner of presentation.

Below: *A stimulating feature of the London Evenings during the past year has been the Therm-wise prattle of 'Dottie,' the North Thames Gas Board's chic gas fan. Other layouts focus more attention on specific appliances.*



Me cry over spilt milk? But darling,
I've got a new gas cooker!
Quite, quite bliss-making...
I mean you can get
at everything so easily...
none of that waiting for parts to cool
in a positive fug of burnt milk and things...
everything is so utterly swift and *clean*
when you've got gas... for anything in the
home... How can anyone cope without it?

North Thames Gas


ONLY GAS CENTRAL HEATING
ANSWERS ALL YOUR FUEL PROBLEMS
NO ordering!
Wonderful thing about GAS—it's always on tap
NO storage!
Big capital saving here! No storage required
NO stoking!
GAS is the truly automatic system. You just set it—and forget it.
NO ashes, dust, dirt! Central Heating's at its cleanest with GAS—free from work and free from smell.
YES, this is AUTOMATIC COMFORT—and at a price you can afford, thanks to the special low tariffs available. Central Heating by GAS positively frees you from all fuel drudgery. And now take your choice: by GAS-FIRED BOILER serving a hot water system of pipes and radiators to all parts of the house or WARMED AIR HEATING—an excellent alternative for a new house; warm air is gently fanned through wall grilles to any part of the house you wish.
CHEAPEST AND BEST BY GAS—and we're easy to pay for. No deposit—and up to 5 years to pay on the amount of easy terms for all Installation costs. Free life assurance, too, for purchases up to £6 years old.
SEND THIS COUPON TODAY
NAME
ADDRESS
AREA GAS BOARD

This year has seen seasonal advertising compaigns replacing co-ordinated campaigns, with a reduced magazine schedule and increased use of the newspaper medium. This is a typical example of the full-depth column advertisement. Note harder hitting at competitors' weak points.

B.G.S.A. PURSUES 'FUEL POLICY FOR U.K.' PLEA

By F. C. HENFREY-SMITH,
GENERAL SECRETARY, BRITISH GAS STAFF ASSOCIATION

THE highlight in the year for the B.G.S.A. is always its annual conference, at which gather nearly 400 staff from all the area boards to consider progress during the past year and to formulate policy for the future. The 1961 conference at Folkestone was outstanding as the Mayor, Alderman F. W. Archer, who was the host to the conference, was also the Chairman of the B.G.S.A. branch there.

The delegates were greatly interested in an informative address by Mr. R. N. B. D. Bruce, Chairman of the South Eastern Area Board. The address, entitled 'What are the alternatives?', put clearly before the conference the important decisions with which the industry is faced in connection particularly with manufacture, but covering also gas storage, distribution and sales policy.

Co-ordinate

The conference reiterated its view that there should be a national fuel policy. The Association stated in 1958, and still holds the view, that the Government should co-ordinate policy on all forms of fuel, to promote the best use of each fuel in the national interest; and in such co-ordination major attention should be given to deriving the greatest benefit from the nation's one indigenous fuel, coal.

The B.G.S.A. has expressed grave doubts as to the political advisability of depending too greatly upon imported methane, or even the use of oil to a major extent for the production of gas.

The Association foresaw and stated in 1958 that, although advantages had derived to the industry from autonomous boards, power should be given to the Gas Council to direct those boards on important matters of national industrial policy.

The Association holds the view that the salary scales which apply to the graded staffs are quite inadequate either to maintain enthusiasm or to attract to the industry the youth coming from the grammar and public schools.

Personal budgets

Its members have clearly exposed this inadequacy by allowing budgets of their personal expenditure to be published in *Thermfare*, which show the almost pitiful existence of a clerk, married with young children, trying to eke out a livelihood on the maximum salary of the Grade at £635 per annum.

The Association has therefore said that it will seek, through the National Joint Council for Gas Staffs, a complete review of the salary scales, to give career grades to suitable employees in the private sector of employment; to recast the APT Grades; and generally to improve the salary levels.

The Association is also concerned at the steady reduction in staff conditions in relation to those of other employees. As the General Secretary said at the annual conference: 'If the historic differences between manual and staff conditions of service are to be reduced, as seems to be the general trend, then clearly staff officers must re-consider their, also historic, acceptance of additional work without premium payment. We must take firm steps to secure that overtime for all staffs, week-end work and attendance on Bank Holidays, is only undertaken on terms which are more acceptable.'

The B.G.S.A. rallied to the call of the National Union of Teachers for black-coated workers to consider together the imposition of a pay 'pause' in the public services and the interference of the Chancellor of the Exchequer with arbitration machinery.

'Pause' resolution

The B.G.S.A. supported the resolution which stated: 'This conference of organisations representing 683,000 employees in the public service expresses its strongest opposition to the Chancellor's imposition of the 'pause' in the public sector and to the Government's interference with the independence of negotiating machinery and arbitration procedure. This conference rejects this policy as being unjust, unreasonable and seriously damaging to good staff relations.'

The Chanceilor received a deputation from the 19 organisations, which included the General Secretary of the B.G.S.A. The declared policy of the Association is to proceed with its plans in connection with the negotiation of improved terms and conditions of employment in the industry.

The introduction of a five-day week for the vast majority of gas staffs was enthusiastically welcomed throughout the country, but has caused controversy among showroom staffs who, because of their duties, were excluded.

Some boards have now agreed schemes with the staff organisations to give greater leisure to such staff, but the demand is for a measure of Saturday leave, or if this is quite impossible, two consecutive days away from their jobs each fortnight.

Equal pay for work of equal value was fully achieved in 1961. the B.G.S.A. pointed out in *Thermfare;* 'Equal pay must bring equal responsibility and equal opportunity or it has failed in its object. All women employees will undoubtedly face up to this, or the ultimate effect of equal pay may prove to be detrimental to women's employment prospects.'

The B.G.S.A. not only holds the largest block of seats on the National Joint Council for Gas Staffs, but is also on the Senior Gas Officers Joint Council, where it is represented by its General Secretary.

The Association believes that it is in the interest of all senior officers, with the possible exception of the very highest board officials, that their terms and conditions of service should be controlled by the Senior Gas Officers Joint Council.

An examination of salaries shows great discrepancies between posts of apparently similar responsibility.

Advice on seniors

The B.G.S.A. has established a national Senior Officers Advisory Committee, which advises the National Council on all matters relating to its senior officer members.

The Association, in addition to providing trade union negotiation and representation, has been able to assist its members by the other services it provides.

Valuable legal assistance has been given to a number of members during the past year in connection with matters arising from their employment. It provides arrangements for such things as continental holidays, house-purchase, and loans for the purchase of cars, and has greatly extended its scheme for purchasing a great variety of goods on preferential terms.

The B.G.S.A., being an industrial union which limits its membership to the staff of the gas industry, takes a keen interest, not only in employment conditions but also the progress of the industry itself.

On boards

It has continually advocated that, as with consumers, the staff should be represented upon the area boards, and it has done its best to improve joint consultation.

It was therefore gravely concerned to learn from its conference delegates that past enthusiasm, for which the industry has long been renowned, is waning and that the industry is suffering from a lack of willing co-operation of management and staff, all working together for the good of the public and the industry.

It was stated that unless there is established in the local units friendly and frank discussion of problems and on changes in organisation (usually decreed from far distant board officers) this lack of enthusiasm will tend to grow and enterprising staff will seek more congenial employment elsewhere.

NALGO—Britain's seventh largest trade union

By G. W. PHILLIPS,
GAS SERVICE CONDITIONS OFFICER

NALGO, for a long time the largest of the 'white collar' unions, has continued its rapid growth during the last 12 months and is now the seventh largest trade union in the country.

Speaking at this year's conference, the retiring president, Mr. G. T. Belton, revealed that membership is well on the way to its target of 300,000. It has more than doubled since the end of the war.

Gas industry workers have contributed to this expansion; NALGO's membership among gas staffs is now greater than it has ever been. There is now every reason to think that NALGO is the biggest organisation of gas staffs in the country.

'Crusade' call

These people are members of an organisation which is very concerned about the way in which public service workers have been losing ground, in relation to those in other fields.

Mr. Belton himself called public servants to a 'great crusade to win for them their rightful place in society and the rewards to which they are entitled, thereby making the public services more efficient and the nation more prosperous.'

In the gas industry, NALGO intends to press for a new salary structure which would have two main effects.

- **FIRST,** it would introduce a career grade into the industry. This would mean better prospects for everyone, and encourage employees to think twice before leaving the industry.
- **SECONDLY,** it would make entry into the industry worthwhile for better recruits.

The Select Committee on Nationalised Industries, reporting on gas, referred to recruitment difficulties. These are not surprising, since, as all NALGO members know, gas staffs are poorly paid by comparison with similar work elsewhere.

Until now, the difficulties have been partly concealed by the re-deployment of those made available by reorganisation, but once this reservoir is exhausted the need to recruit will become urgent. Unless the industry is able to compete on something like level terms, recruits will not be forthcoming.

Information gathered by NALGO during the year, in collaboration with the Gas Officers' Guild and the British Gas Staffs' Association, has shown that the problems are not only at the recruitment end.

The results of the review show that salary levels of senior officers are generally low in relation to the responsibilities they carry and in comparison with those for posts of similar responsibilities elsewhere. Nor do the prospects offered appear to be as attractive as those in many other industries.

This example of co-operation between trade union organisations in the industry shows what can be achieved by working together.

At present, discussions are going on between NALGO and the British Gas Staffs' Association. NALGO looks forward to the time when gas staffs will speak with the one voice of a united organisation.

Last year the industry earned a record income, and sold more gas than ever before. The industry is facing strong competition from other forms of power, but these magnificent results were achieved largely as a result of the devotion and hard work of the men and women employed in it.

But there is much more to be done. The Select Committee pointed out that the cost of producing gas must come down if it is to retain and increase its share of the market.

A new technical revolution is required. In many parts of the country, the staffs of area boards are working hard on new processes, on new selling methods, on new ways to make gas the premier fuel of the second half of the twentieth century.

Research group

The Gas Council has set up a new basic research group which will, it is hoped, lay the scientific foundations for the future.

The long haul of reorganisation carried out since nationalisation is nearly over; NALGO members have played an important part in this.

Now the future of the industry depends on its ability to attract and retain staffs of adequate calibre. To this end NALGO will give its energies and its organisation.

It supports training and education schemes which will help staff to deal with these new problems. It will do what it can to make the industry attractive as well as interesting.

INDUSTRIAL RELATIONS

Continued from page 131

Training is made easier for students at educational establishments both within and outside the industry by, where necessary, reimbursement of fees and other associated expenses, as well as by day release.

It makes satisfactory reading to learn that, for example, the number of new gasfitting apprentices recruited during the year increased by 100; and that there was also an increase in the number of craft apprentices for carpentry, bricklaying, and other craft trades.

Higher education.—Higher education, too, is continuously fostered and encouraged. The courses for management representatives at Brooklands College, which are residential, continue to be well-supported and appreciated.

There are also the respectable totals of 477 student apprentices in employment, with 38 employees engaged in full-time university courses reading for a degree, not to mention the various students studying under the various boards' scholarship schemes.

Scholarships

Thirteen scholarships were awarded to employees by various area boards at universities or technical colleges. Apart from activities in the higher technical fields of education and training, numbers of employees in other forms of training are also impressive, with 448 studying for secretarial and accountancy qualifications, 432 engaged on salesmanship courses, and 357 on shorthand and typewriting.

It may well be that these numbers will increase with the development of the industry in new processes and methods. Even in the field of management training, some area boards are running their own courses. The management and executive development programme of the West Midlands Gas Board is a case in point.

Recruitment.—Educational institutions outside the industry are made aware of what is going on in the industry. Four short works courses for public schoolboys have already been held, and they are to be continued.

Reports from the boys who have been on such courses show that these courses have been much appreciated in the sense that they have given them a very good insight into the workings of the industry and into the prospects of those wishing to be engaged therein.

The boards also keep in close touch with local educational institutions of all kinds, and with youth employment agencies.

PERSONAL NOTES

MR. WILFRID BAILEY, secretary to the Gas Council since 1958, was appointed Deputy Chairman of the Southern Gas Board. MR. R. G. HUXTABLE, M.B.E., became the new Secretary of the Gas Council. Mr. Huxtable was secretary of the South Eastern Gas Board since 1956. MR. G. L. MAY, solicitor to the South Eastern Gas Board, was appointed Secretary to the Board, and MR. P. P. RICHBELL was appointed his successor.

MR. W. HYDE, chief accountant of the Southern Gas Board since 1956, left to take up the appointment of Director of Finance and Administration of the West Midlands Gas Board. Mr. Hyde's successor as Chief Accountant of the Southern Gas Board is MR. J. H. SMITH, formerly assistant chief accountant of the West Midlands Gas Board.

MR. G. LE B. DIAMOND, chairman of the West Midlands Gas Board, retired, and MR. C. H. LEACH, formerly chairman of the Southern Gas Board, succeeded him. MR. A. F. HETHERINGTON, who was deputy chairman of the Southern Gas Board, became its new head.

MR. G. U. HOPTON was appointed the new Director of the Gas Council's London Research Station at the Fulham Road Laboratories. MR. W. B. S. NEWLING was appointed Assistant Director.

MR. FRANK LILLEY, M.P., (Kelvingrove, Glasgow) was appointed Parliamentary Private Secretary to MR. J. C. GEORGE, M.P., Parliamentary Secretary to the Ministry of Power.

MR. G. E. CURRIER, O.B.E., deputy chairman of the North Eastern Gas Board since vesting, retired.

SOME MAJOR ITEMS FROM THE YEAR'S PAGES

INSTITUTION COMPANIONS

Elected Companions of the Institution of Gas Engineers, are: MR. P. D. M. AIRD; MR. J. R. W. ALEXANDER, C.B.E.; MR. R. S. JOHNSON, M.B.E.; MR. T. MERVYN JONES, C.B.E.; MR. C. H. LEACH; MR. M. MILNE-WATSON, C.B.E.; MR. A. F. OATLEY; and MR. D. P. WELMAN.

MR. L. P. INGRAM, M.B.E., retired from his position as chief engineer to the South Western Gas Board and MR. JAMES CARR, O.B.E., retired as deputy chairman to the South Western Gas Board. MR. A. H. MORLAND was appointed his successor, having been a Board Member since 1958. MR. G. H. PALMER, M.B.E., deputy secretary of the South Western Gas Board, was appointed Secretary, and MR. J. HOLTBY, deputy chief accountant (Accounts) became Chief Accountant. MR. G. F. OLIVER, M.B.E., deputy chief engineer, became Chief Technical Officer with MR. T. W. CLAPHAM, Area Production Engineer and MR. T. W. JACKSON, Area Distribution Engineer.

MR. B. G. H. CLEGG was appointed Commercial Manager and MR. G. G. WARNE, Distribution Engineer, to the Southern Gas Board. Their appointments followed the departure of MR. W. H. ELKERTON and MR. F. BELL, formerly commercial manager and distribution engineer respectively, to new posts in the West Midlands Gas Board.

MR. W. S. HUBBARD, production engineer of the North Western Gas Board's Mersey Group, retired because of ill health, after 45 years' service with the gas industry.

MR. T. MERVYN JONES, Chairman, Wales Gas Board, became a Commander of the British Empire in the 1961 New Year Honours List.

MR. D. D. MELVIN, Member of the Scottish Gas Board, was appointed Secretary of the Society of High Constables of Edinburgh.

DR. J. BURNS, G.M., Deputy Chairman, North Thames Gas Board, was elected President of the Institute of Fuel.

OBITUARY

SIR ERNEST WOODHOUSE SMITH, C.B.E., a former director-general of Gas Supply, Ministry of Fuel, and from 1947 to 1957 chairman of the Industrial Coal Consumers' Council, died at the age of 76.

MR. F. G. PYPER, chief engineer and production controller of the East Midlands Gas Board, died at the age of 60.

MR. C. H. PEARSON, a director of Parkinson Cowan Ltd., died at the age of 57.

MR. ARTHUR DOCKING, until June 1958 Chairman and Managing, Director of Radiant-Heating Ltd., died at the age of 78.

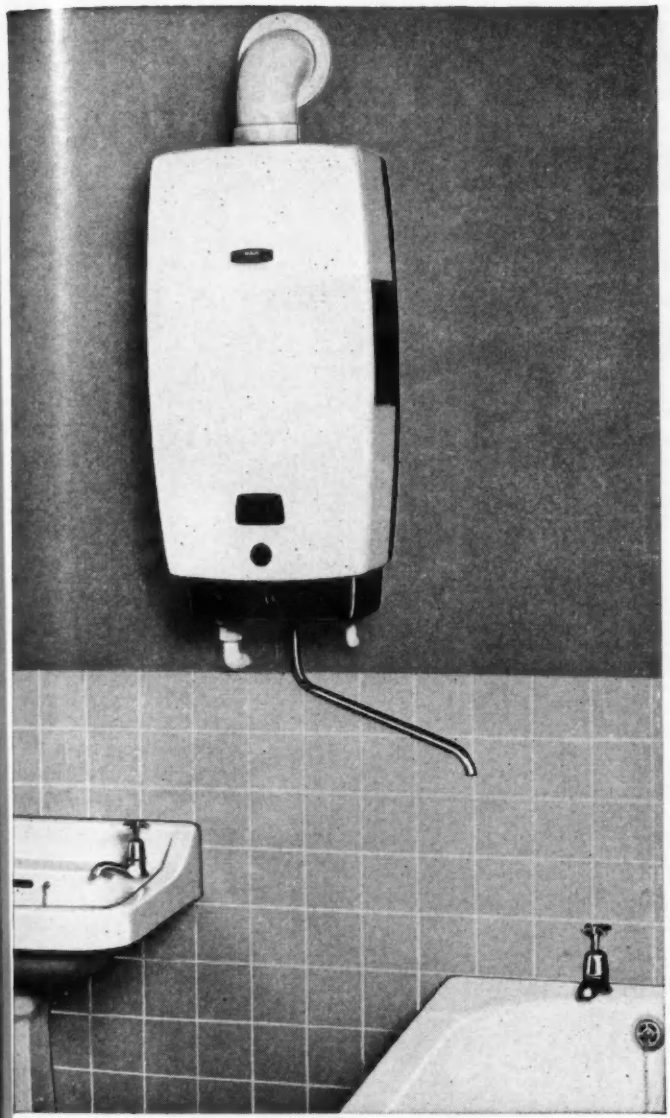
MR. A. W. ELLIOTT, assistant chief engineer (production) for the East Midlands Gas Board, died at the age of 54.

MR. FRANK WEST died on January 21.

DR. W. A. MACFARLANE, C.B.E., managing director of the National Industrial Fuel Efficiency Service and president of the Institute of Fuel, died at the age of 53.

MR. F. G. BREWER, O.B.E., secretary to the Gas Council from 1948 until his retirement in September 1958, died.

MR. R. B. GLOVER, a director of W.G.I. Ltd. (West's Group of Industries) died at the age of 71.



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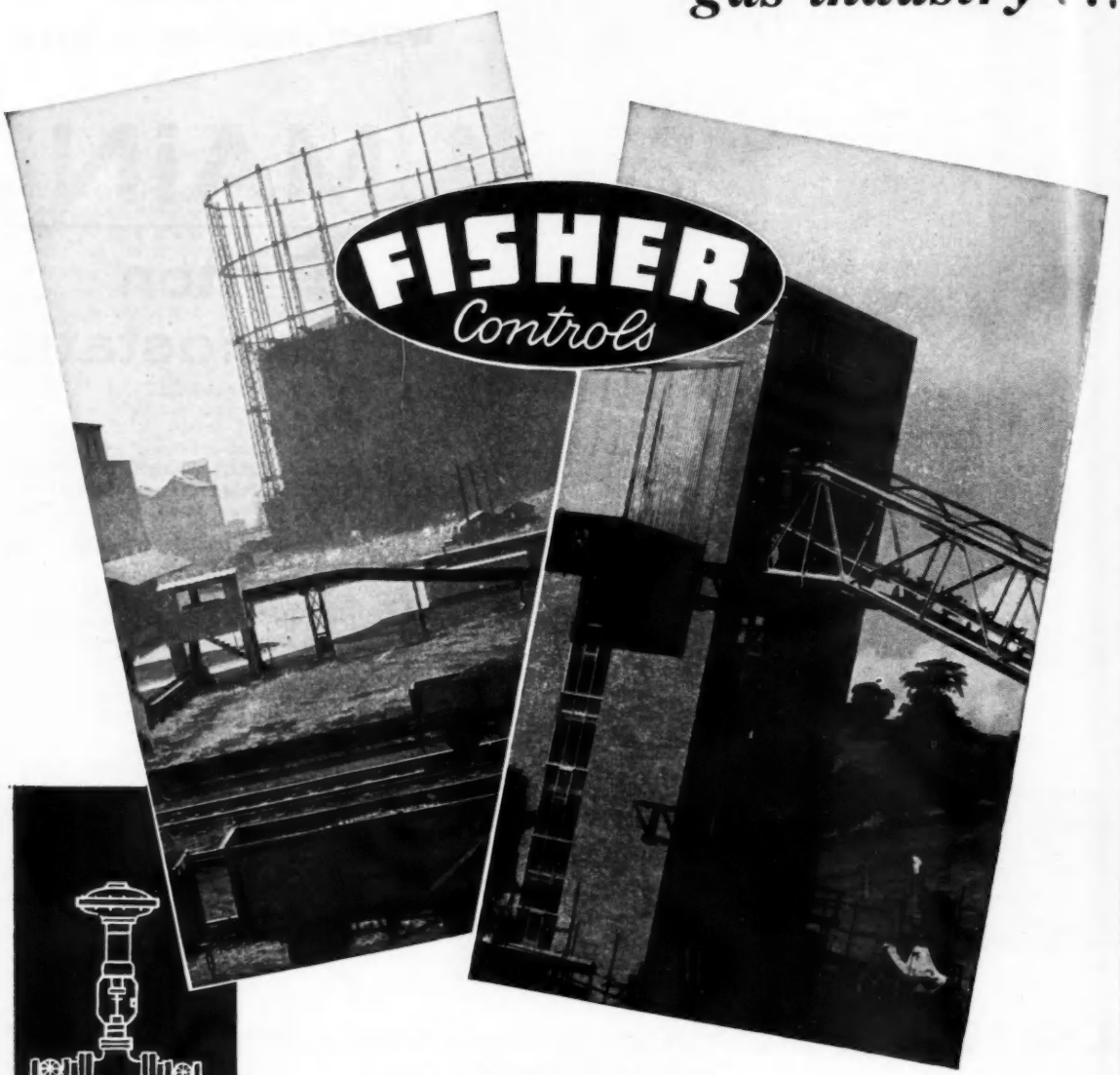
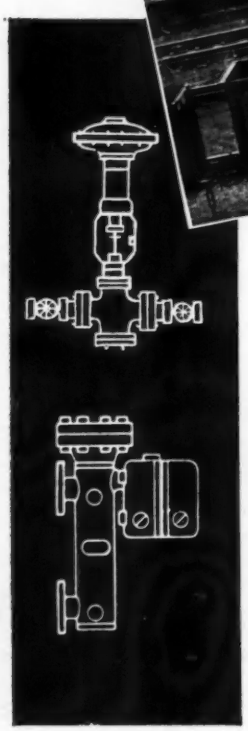
In the 'changing face' of the gas industry . . .





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RESULT, REPORT and RECOMPENSE

● THE GAS INDUSTRY is in no position to permit itself the 'gimmicks' of inadequate salaries and incomplete negotiating machinery, especially if they stem almost entirely from excessive autonomy. Much of the work of the Gas Officers' Guild during 1961 has been devoted to the search for remedies for these shortcomings—

—says J. R. W. ALEXANDER,
Executive Chairman, Gas Officers' Guild

THE conversion of a deficit of £2,376,521 in 1959-60 into a surplus of £2,039,124 in 1960-61 (a total of £4,415,645) in the working of the area gas boards is a noteworthy and encouraging achievement, associated as it was with a 2.9% increase in the sale of gas. These and other results given in the annual report and accounts of the Gas Council bear comparison with industry generally, where a difficult year—characterised by the imposition by the Government of varied fiscal expedients—usually led to smaller profits and sometimes loss despite increased turnover.

The expressed and implied strictures contained in the report of the Select Committee on the Gas Industry present a challenge which the gas industry will generally accept as necessary to its development, particularly in the direction of centralised gas production and distribution under a central authority, increased research, lower gas prices and intensified and co-ordinated commercial activities, all as a matter of urgency.

Under Gas Act

In so far as the structure of the gas industry is fundamentally unsound—or, more accurately, may be said not to meet current, particularly future, requirements—it is relevant to observe that the principal officers of the industry have had to work in conformity with the structure provided by the Gas Act, 1948 and not, in the main, within a structure of their own creation.

When that Act was passing through its various stages in Parliament, considerable emphasis was placed upon the need for substantial autonomy for the area boards and, as a result, the Act went further in that direction than any other nationalisation enactment.

It soon became clear, however, that a fully co-ordinated policy and practice could not be secured, or could be partly secured only as a result of compromise after prolonged delay and loss. The composition of the Gas Council itself—12 of its members being Area Board Chairmen—necessarily cannot provide a central authority of strength and unanimity, or enable the leader to lead. The situation is one in which agreement to disagree, or to do nothing, becomes inescapable.

It is well that attention should be focused upon these shortcomings, for they have been the subject of so much conversation during the last 12 years. The emphasis of the report of the Select Committee is on the manufacture and distribution of gas—the fundamental and urgent issue upon which all others are dependent—but its impact upon the commercial and administrative sides of the industry is of considerable significance, especially to all engaged in the industry.

Loyal servants

These servants of a great public service—whose loyalty, acceptance of responsibility and refusal to be involved in industrial disputes are universally recognised—cannot regard drastic technical and commercial proposals for the future with unconcern.

The Select Committee did not enquire into their position, despite the fact that the reports and accounts of the gas industry, which the Committee was required by the House of Commons to examine, do not fail to deal with 'the gas industry as employer'.

While the uncertainty of the future in terms of employment and otherwise, cannot yet be said to have occasioned marked apprehension, the impact of criticism of the industry—and the knowledge that it is having undue difficulty in the recruitment of suitably qualified personnel—cannot be regarded as being without effect upon those who serve the industry. The challenge should be met and some reassurance publicly given by the leaders of the industry, whose confidence needs to be transmitted to all in its service.

Guidance necessary

Moreover, guidance is necessary as to the particular qualifications and experience which the industry of the future will demand. These are already much different from what has been required in the past, but the years ahead will bring even greater changes, necessitating the formulation of education and training programmes now and the adjustment of existing personnel to new, often entirely new, conditions.

Officers in the industry would be the last to ignore the request of the Chancellor of the Exchequer for a wage pause, which—contrary to what one is led to believe—only requires the postponement of increases until the financial stability of the country has been re-established.

Officers are, however, faced with the particular difficulty that—despite increases designed to reflect increases elsewhere—the overall level of salaries has

for long been inadequate and their wide variation inexplicable.

Examination of the replies to the questionnaire issued by the Gas Officers Guild in 1960 clearly establishes this inadequacy and the difficulty of reconciling the varied salaries paid by different Boards for comparable posts. Officers in the same type of occupation may be in the same salary group, despite the fact that the scope and responsibilities of the posts may diverge enormously.

Similarly, it is impossible to say that the qualities, qualifications and experience required in the industry generally are matched by the salaries offered, or that they compare with salaries elsewhere. One of the results is that the industry often cannot retain qualified personnel in its service, or attract the best recruits to its ranks.

Less parochial

The implication of the report of the Select Committee that the gas industry must think on a less parochial scale, is as relevant in the matter of salaries as it is in other aspects of the gas business. A joint investigation into the facts (which will need for the first time to be disclosed) is an imperative need.

If there is factual understanding, as there cannot be at the moment, there is every reason to believe that a revised salary structure can be negotiated in the interests of the industry and further justifying its claim to be a good employer.

Alongside this problem of inadequate salaries is the incomplete scope of the joint negotiating machinery for the determination of the salaries and conditions of service of officers. This machinery had to be established to meet the requirement of the Gas Act, 1948.

Enlightened

The industry has occupied an enlightened position as to collective bargaining, for it implemented the recommendations of the Whitley Committee during the First World War in respect of all manual workers and, soon after the Second World War, machinery was established covering all staffs.

But it was not until the middle of 1951 that, after prolonged and difficult negotiations, the Senior Gas Officers Joint Council was established and even then only on the representatives of the officers agreeing that, in each area board separately, a bare majority of officers in each of several salary groups could exclude that group from the negotiating machinery. As a result of the ballots held, the officers of one area board were wholly excluded, in others they were wholly included, while in the remainder a given group may be included in one board but excluded from another.

From this it follows that an employee promoted from staffs salary grading to officers salary grouping may find himself no longer negotiable, while an officer moving from one salary group to another, or from one board to another, may find himself passing from the negotiable to the non-negotiable, or vice versa.

The situation becomes additionally Gilbertian in that, in practice, officers who have been 'contracted-out' of the negotiating machinery cannot, in practice, be excluded from enjoying the equivalent of any improved salaries and conditions negotiated before the Joint Council on behalf of those who are 'contracted-in.'

The new edition of the 'Industrial Relations Handbook' of the Ministry of Labour describes this as an 'unusual feature' of the constitution of the Joint Council. It is understandable if others feel unable to permit themselves such under-statement.

The search

The gas industry is in no position to permit itself the 'gimmicks' of inadequate salaries and incomplete negotiating machinery, especially if they stem almost entirely from excessive autonomy.

Much of the work of the Gas Officers Guild during 1961 has been devoted to the search for remedies for these shortcomings. It is encouraged by Solon's 2,000-year-old thought that we 'grow old always learning many things.'

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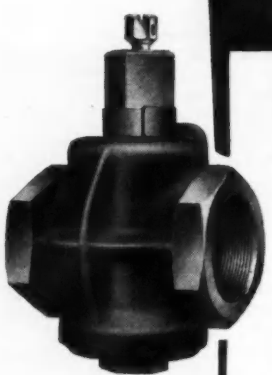

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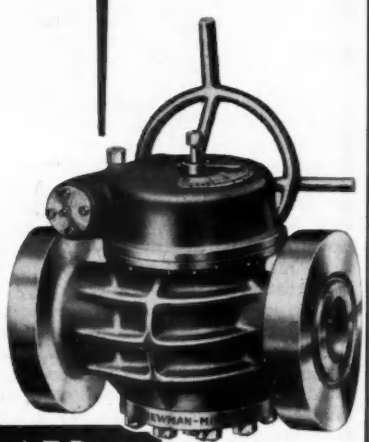

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THE INSTITUTION OF GAS ENGINEERS

Highlights of the year's activities

During the past year the Institution of Gas Engineers has vigorously maintained its professional, educational and technical activities.

The deep gratitude of the Institution is acknowledged to the Gas Council, the area gas boards and the member firms of the Society of British Gas Industries for the very ready co-operation extended by these bodies collectively and their members and staffs individually.

Thanks are due particularly to those who served as members of the Council and Committees of the Institution and those who represented the Institution at conferences and committee meetings of other bodies.

The membership of the Institution has continued to grow and in addition to the normal rate of increase there has this year been an additional expansion as a result of the transformation of the Scottish Association of Gas Managers into the Scottish Section of the Institution.

The death of 23 members is recorded with regret. Included among these was one Honorary Member, Mr. A. W. Smith, C.B.E. The service of these members over a long period is recalled with gratitude.

THE Scottish Association of Gas Managers held a very successful centenary meeting in Edinburgh in September, 1961, at the conclusion of which its previous decision to become the Scottish Section of the Institution of Gas Engineers took effect. The Council of the Institution is pleased to welcome the Section and its many supporters who have become members of the Institution as a result.

The other seven district sections and the affiliated Irish Gas Association have carried out their programmes in a highly satisfactory manner, and a wide variety of papers have been presented and discussed at their meetings. Many of these have been reproduced in the Technical Press.

The junior gas associations have continued to flourish, and many praiseworthy and technically interesting papers have been delivered to their meetings up and down the country. It was with very great regret that news was received of the death of Mr. T. W. Pickthall, who was the representative on the Institution's Council of the British Junior Gas Associations' Joint Council. In this position he has been succeeded by Mr. O. Pincock.

The 98th Annual General Meeting of the Institution was held in London on May 16 to 19, 1961. In view of the presidency being held by a distinguished engineer from one of the major contracting companies, it was fitting that the meeting should have been preceded on this occasion by a reception at which members were the guests of the Society of British Gas Industries.

Following the presidential address by Mr. H. S. Cheetham, an interesting programme of papers included two distinguished contributions by authors from abroad. Dr. H. Weitenhiller gave an account of the Lurgi process of total gasification as developed in Western Germany, and Mr. A. P. Agishev described the achievements of the gas industry in the U.S.S.R.

The principal guest at the president's luncheon was Mr. Richard Wood, M.P., Minister of Power. Other social events included a reception and dance at Grosvenor House, visits to the opera and orchestral concerts and a visit to Glyndebourne and the Sussex countryside. As usual, an extensive programme of works visits was carried out, and special events were arranged for ladies accompanying members. Many distinguished gas engineers from overseas were welcomed to the meeting.

Awards

The President presented the following awards at the 98th Annual General Meeting:

Institution Gold Medal, 1960, was awarded to C. Stott for his paper on 'Gasification at the Isle of Grain,' read at the Annual General Meeting of the Institution of Gas Engineers, in Edinburgh, on June 1, 1960.

H. E. Jones London Medal, 1960, was awarded to W. J. Bennett, J. B. Carne, C. H. Purkis and T. T. White for paper on 'Experiences with Branched-flue and SE-Duct Systems for Venting Gas Appliances,' read at the 26th Autumn Research Meeting of the Institution of Gas Engineers, in London, on November 16, 1960.

Institution Silver Medal, 1960, was awarded to K. G. Eccleshare and C. H. Hirst for their paper on 'Recent Industrial Gas Developments in the South West,' read at a meeting of the South Western Section of the Institution of Gas Engineers, in Bristol, on December 8, 1960.

Institution Bronze Medal, 1960, was awarded to B. Santo, for his paper on 'Cost Control in Relation to the Gas Engineer,' read at a meeting of the Eastern Junior Gas Association, in Cambridge on April 20, 1960.

William Dieterichs Memorial Prizes, 1960, were awarded to G. Holmes and K. G. Rhodes, for their paper on 'An investigation into the Use of Gas for Drying and Preheating Foundry Ladles,' read at a meeting of the Manchester District Junior Association of Gas Engineers, in Liverpool, on April 27, 1960.

Many tributes have been paid to the Secretary of the Institution, Dr. W. T. K. Braunholtz, O.B.E., who retired at the end of the 98th Annual General Meeting, after serving the Institution faithfully and efficiently over a period of 26 years. The gratitude of the members was conveyed to him by the President in making a number of presentations at the meeting.

Dr. Braunholtz has been succeeded as Secretary by Mr. A. G. Higgins, Assis-

tant Secretary of the Institution since 1943.

The 27th Autumn Research Meeting will be held at Church House, Westminster, on November 21 and 22, 1961, under the Chairmanship of the President, Mr. T. C. Battersby, M.B.E.

The International Gas Union has been actively supported by the Institution during the past year. In March 1961 the Council of the Union met in London and the Institution acted as hosts to the delegates. The 8th International Gas Conference was held in Stockholm from June 27 to 30, 1961, and was attended by 122 delegates from Britain, together with 79 ladies, out of a total conference attendance of 620 delegates and 287 ladies.

Active participants

The British delegation presented as many reports and papers as any other country and took a very active part in the discussions. The Institution provided reports of the two committees of which it held the secretariat, and also two reports on international enquiries which it had undertaken at the request of the Council of the Union.

Three further papers were presented by individual authors under the aegis of the Institution of Gas Engineers.

The Council of the International Gas Union has revised the committee structure of the Union, with effect from the end of the Stockholm Conference. The Institution holds the Secretariat of the new committee on production of manufactured gases, whose Chairman is Dr. J. Burns, a Vice-President of the Union.

The Institution is represented on the council of the Union also by Dr. A. E. Haffner, Dr. W. T. K. Braunholtz (an Honorary Secretary of the Union) and Mr. A. G. Higgins. One representative of the Institution serves on each of the following further committees; natural gases, transmission of gases, distribution of gases, utilisation of gases, statistics and documentation and sundry questions.

Joint meeting

A joint meeting with the Coke Oven Managers' Association and the British Coke Research Association is being held under the auspices of the Institution on November 1, 1961, at the Federation of British Industries, Tothill Street, Westminster, when a paper on the 'Application of Hydrorefining in the Processing of Vertical Retort Tar Naphthas and Coke Oven Crude Benzoles,' is to be given by Mr. J. B. Lane.

The revised Royal Charter and By-Laws which came into operation on January 1, 1961, have been printed and circulated to members. A number of persons eminent in the gas industry have been transferred to the new class of Companions by resolution of the Council. The first elections to the new class of Graduates were made in the May ballot list.

The decision of the Council of the Institution to replace the former transactions and Bulletin of the Institution by a monthly journal has had a favourable response.

The technical work of the Institution for the year will be presented to the 27th Autumn Research Meeting in the 22nd Report of the Chairmen's Technical Committee.

The drafting panels of the codes of practice sub-committee have continued throughout the year their work on the revision of the codes orginally prepared about 12 years ago. A number of final drafts have been approved for submission to the Council for Codes of Practice of the British Standards Institution.

The gas distribution committee is continuing to study the occurrence of breakages in cast iron mains and the details of incidents involving injury, fire or explosion which result from leakages due to this and other causes.

The gasworks effluents committee has received a report from the sub-committee which has been studying biological processes for the purification of gasworks effluent, and the conclusions are summarised in the 22nd Report of the Chairmen's Technical Committee. The Committee is studying the technical consequences of recent legislation on the prevention of river pollution and kindred matters.

The gasworks safety rules committee continues to study reports of incidents which have occurred at gasworks and to draw attention to various ways in which hazards may be eliminated.

Meter work

The meters committee has continued its work on the standardisation of dimensions of small-cased meters, and on meter performance. A detailed analysis of the causes of failure of in-date meters in service has been undertaken over a period of three months in co-operation with the area gas boards and the meter manufacturers.

The committee on unaccounted-for gas has been active in the examination of technical evidence submitted from a wide variety of sources, and an interim report is being prepared for the Council. This will show the main aspects of unaccounted-for gas under the two headings of errors of measurement and actual physical losses.

The overall objective of the Committee is to estimate the effect of each of the sources of measurement error, then to determine the actual extent of physical losses and to allocate the latter between the various contributing factors. Certain investigations which will provide further essential data have been set in motion at the request of the committee.

The educational work of the Institution for the year will be presented to the 27th Autumn Research Meeting in the 38th Report of the gas education committee.

Young people are stimulated to take an interest in the gas industry by the series of Christmas lectures arranged in various centres by the Institution and its district sections. In the 1960-61 Christmas vacation lectures given in Birmingham, Derby, Edinburgh, Liverpool, London, Manchester, Middlesbrough and Oxford attracted a total attendance of approximately 2,230 schoolchildren and college students.

Following the course for works engineers held last year, a second very successful short refresher course, this time for gas distribution engineers, was held at Pembroke College, Oxford, from April 9 to 15, 1961, and 57 members took part in a programme which included syndicate discussions on 10 lectures by senior engineers. A course on gas utilisation is being planned for 1962.

Short courses

A short course for teachers of gas technology arranged by the Ministry of Education in collaboration with the Institution was held at the School of Agriculture, Houghall, Durham, from July 16 to 22, 1961. Discussion centred on the recently revised course in gas utilisation of the City and Guilds of London Institute and on various aspects of teacher training.

The revision of the Education Regulations of the Institution made necessary by the amendments to the Royal Charter and By-Laws, was printed in February, 1961. The revised regulations include details of the Institution Examination which replaces the former Associate Membership Examination. The latter will be held for the last time in April, 1962, and thereafter candidates will require to qualify under the new regulations.

Sandwich courses continue to offer a popular route to gas engineering students. Following the introduction of graduates as a new class of members of the Institution, successful completion of an approved three-year sandwich course is now a qualification for graduateship, while success in a four-year course is necessary for associate membership.

Temporary measure

However, as a temporary measure during the period of change, it has been agreed that students who commenced a three-year course before September 1, 1961, will be eligible for associate membership if successful in the course. Courses of four years duration submitted by the Royal College of Advanced Technology, Salford, and by Westminster Technical College, have been approved by the Council.

The regulations for the Charles Hunt Memorial medals have been revised.

The Institution has also issued new regulations for the Certificate in Gas Salesmanship and Consumer Service, taking into account the revision of the City and Guilds of London Institute examinations in gas utilisation, and introducing a new subject, the art of expression in place of English S1.

BIGGEST ARRAY OF GAS EQUIPMENT FOR INDUSTRY IS ON SHOW IN N.-WEST

THE largest collection of gas-fired industrial installations ever housed under one roof in the north-west is being exhibited by the North Western Gas Board at the City Hall, Manchester, until October 26 as a special section of the Industrial Equipment Exhibition.

NEWS SUPPLEMENT

It occupies the whole of the Byrom Hall and is designed to present a broad glimpse of the manifold industrial activities in which town gas plays a key part.

No less than 41 industrial firms from all over the United Kingdom have lent gas-fired equipment for the exhibition and their installations are presented in nine different sections, namely: 1, Heat treatment of metals. 2, Metal melting. 3, Hot working of metals. 4, Glass working. 5, Burners. 6, Product finishing. 7, Space heating. 8, Textiles. 9, Food.

In addition, a special section presents the work the gas industry in the north-west, supported by the Gas Council's two research stations at Fulham and Solihull, is doing to develop special gas-fired appliances for new industrial processes. Further details will appear in the next issue of 'Gas in Industry' on November 1.

Opening the exhibition, Sir Henry Jones, Chairman of the Gas Council, said gas sales in the north-west had increased by 50% since 1950 and now accounted for 35.5% of the North Western Gas Board's total gas sales.

Gas was a good customer of industries in this country, quite apart from its use of coal and oil.

In the five years ending March, 1961, the gas industry had invested in new capital equipment to the tune of £100 mill. for plant and machinery; £88 mill. for mains and services and £20 mill. for gas meters.

In addition, it had acted as retailer for gas appliances which had brought in a revenue of £180 mill. Appliances were sold and fixed at the rate of about 10-a-minute during every working day.

The exhibition was primarily intended for the north-west, which had a population of over 6½ mill., with 2.6 mill. workers—13% of the total in England and Wales.

It was of interest to note that this is one and a half times as many as in Scotland and over twice the number in Wales. Outside London, the greatest concentration of population was in that area.

Of this working population, 1½ mill. were employed in the manufacturing (as opposed to distribution) industries, the engineering group being by far the largest, employing over half mill. workers.

Since 1945, there had been 4,370 new factories built in the area occupying a total of 122 mill. sq.ft.—nearly 3,000 acres.

Turners Asbestos Cement Co. Ltd., recently invited the Press to a reception to mark the opening of their new London showroom at 34, Dover Street, London, W.1. Intended for architects and consultants, building contractors and engineers throughout the country as an information centre on asbestos cement products manufactured by the Company, this showroom will display a full range of the Company's products, which include asbestos cement corrugated and flat sheets, moulded goods, decorative materials, pressure and sewerage pipes and electrical insulation materials.

CORRESPONDENCE

TITLE CHANGE

Sir,

I have been sojourning in the uplands of Banffshire and it is only on returning home this week I have observed Mr. Watson Napier's letter regarding the change in the title of the Scottish Gas Managers' Association.

Filial affection is an admirable trait but to suggest by inference that because the members rejected by a very large majority his father's proposal to rename the North British Association of Gas Managers they were a dull lot lacking in vision is just too much. A word in defence must be said. Mr. Napier had no need to be bitter because the members did not share his antipathy to the use of 'North British' instead of 'Scottish.'

Strange as it may seem the change was strongly resisted because the members rather liked the title, hallowed as it was by long custom and tradition and with a history not without periods of glory. Besides it was in many ways appropriate to the composition of the membership, a substantial portion of which consisted of managers of small gas undertakings.

Mr. J. W. Napier was a man of great personality and ability who in his time did much to enhance the status and prestige of the gas industry; but even he, more than 30 years ago, could not have envisaged the tremendous changes which have taken place in the construction of the gas industry.

It is these changes which have compelled not only alterations in the form of the Association but also a radical change in the composition of the membership. Mr. J. W. Napier's proposal of 1929 bears no relationship whatever to the present-day conditions and has nothing whatever to do with the case.

Incidentally Mr. J. W. Napier—a very strong individualist, if ever there was one—would have intensely disliked many of the changes which have taken place in the structure of the gas industry and I am nearly certain he would have had regrets about the loss of the independence so long cherished by the Scottish Association. I well remember the assiduity of his efforts to have a Scottish Gas Council in Scotland's own right.

Mr. Watson Napier may be assured that his father's reputation rests on firmer ground than requires the support of a claim to prescience in the trivial matter of the name of an association. I am sure that he will agree that if the members of the Scottish Section of the Institution of Gas Engineers are mindful to preserve all that was best in the old Association and incorporate the best features of the developments of to-day, success is assured and Scotland's reputation in the gas industry will remain undimmed.

Yours faithfully,

DAVID FULTON.

'Glenshiel,' Helensburgh, Dumbartonshire.

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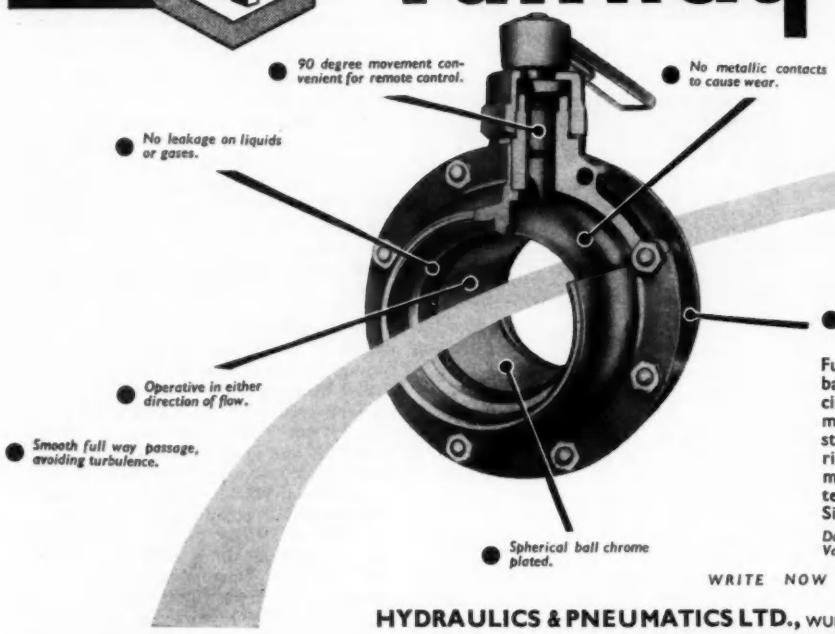
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